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FIFTH EDITION.

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AN ESSAY

ON THE

IMPROVEMENT TO BE MADE IN THE CULTIVATION

OF

SMALL FARMS

BY THE

INTRODUCTION OF GREEN CROPS, AND HOUSEFEEDING THE  
STOCK THEREON:

ORIGINALLY PUBLISHED IN AN ADDRESS TO THE SMALL FARMERS

ON THE ESTATES OF THE

EARL OF GOSFORD AND COLONEL CLOSE,

IN THE COUNTY OF ARMAGH.

By WILLIAM BLACKER, Esq:

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This work has gone through four large editions, the last consisting of 20,000 copies, and is now submitted to the Public considerably enlarged and improved. Price Eight Pence; or at Fifty Shillings per Hundred, if purchased by Landlords for distribution on their estates, or for Lending Libraries, by applying to the Publishers, W. Curry and Co. Dublin, or R. Groombridge, London.

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EXHIBIT

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# CONTENTS.

## CHAPTER I.

Introductory Argument—Increase of Stock by House-feeding—Increase of Manure—Calculations in regard to each—More profit by feeding a Milch Cow on Turnips or Rape, and paying a fair value for such food, than by feeding on Hay or Straw, if to be had for nothing—Great advantage to Cotters—Benefit attending the proper Rotation of Crops—Necessity for appointment of an Agriculturist .....

## CHAPTER II.

Directions for the Preservation of Health—Advantages of Cleanliness and Ventilation in this respect—Danger of neglecting them in cases of Infectious Complaints—Recommendation of Temperance Societies—Great Saving by abstaining from Dram Drinking ..... 20

## CHAPTER III.

Maxims of universal application in Farming—As to Draining, Destruction of Weeds, Cropping—Management of Manure Heaps—Square Enclosures—Levelling useless Ditches—Horses not suitable to Small Farms—Consumption of Straw in Thatch..... 3



CHAPTER IV.

General Observations upon Ploughing—Upon the Mode of Cultivation at present in use as to Potatoes, Turnips, Flax, and Wheat—Advantages of laying on Lime with the Potato Crop, and giving House Manure to raise Turnips—Necessity for stopping the spread of Ragweed, Coltsfoot, and Thistles, by means of the Seed—Observations as to the weed called Prussia or Corn Charlock, the Corn Marygold and Wild Poppy—Use of Chaff as an alterative for Cattle..... 30

CHAPTER V.

Erroneous Opinions as to Land employed in raising Cattle Crops—Different Opinions as to value of Turnips compared with Potatoes—Reasons for preferring former for the use of Small Farmers—Land to be applied to what will produce the most money—Great Return from buying poor Springers—Objections to continual Tillage answered—Increased Employment and good Wages, and accumulation of Property thereby—No one to be discouraged from commencing, however poor..... 47

CHAPTER VI.

Case of Small Farmers in reduced circumstances—Mode of Recovery pointed out—Crops according to old method compared with those recommended—Others to be substituted according to circumstances—Improvement in the power of all—Objections answered ..... 55

CONCLUSION,

Pressing the importance of the subject, and explaining the Plan of Assistance to be given—Advantage of Planting Timber for Fuel—Present state of the Small Farmer, and the appearance of the Country, contrasted with what they might be—Anxious desire that this Address may be attended with some good effects ..... 64



# CONTENTS.

iii

## APPENDIX.

No. I. Labourer's Friend Publication .....	69
No. II. Rotation for a Two-acre Farm .....	72
No. III. List of Agricultural Seeds suited to an English acre of Land.....	74
No. IV. List of Sundry Garden Seeds for Cottagers' Use	74
No. V. Extracts from the Accounts of the Markethill Agri- cultural Meetings, for the years 1833, 1834, 1835, and 1836, taken from the Newry Commercial Telegraph Newspaper	74
No. VI. Information as to the different qualities of Milk as it comes from the Cow, taken from Mark-lane Express.....	87
No. VII. Successful Introduction of Improved Agriculture on the Rich-hill Estate .....	88
No. VIII. Feeding Cattle on Flax Seed .....	89
No. IX. Method of Curing Butter, recommended in the Irish Agricultural Magazine .....	90

- 1. The first part of the paper is devoted to a general discussion of the problem.
- 2. The second part is devoted to a detailed study of the case of a single particle.
- 3. The third part is devoted to a study of the case of a system of particles.
- 4. The fourth part is devoted to a study of the case of a system of particles.
- 5. The fifth part is devoted to a study of the case of a system of particles.
- 6. The sixth part is devoted to a study of the case of a system of particles.
- 7. The seventh part is devoted to a study of the case of a system of particles.
- 8. The eighth part is devoted to a study of the case of a system of particles.
- 9. The ninth part is devoted to a study of the case of a system of particles.
- 10. The tenth part is devoted to a study of the case of a system of particles.

## CHAPTER I.

Introductory Argument—Increase of Stock by House feeding—Increase of Manure—Calculations in regard to each—Cheaper to feed Milch Cows on Rape or Turnips, allowing them to be worth ten pounds per acre, than to feed on dry food, and get it for nothing—Great Advantage in regard to Cotters—Benefit attending the proper rotation of Crops—Necessity for appointment of an Agriculturist.

### INTRODUCTORY OBSERVATIONS.

You are all well aware of the disposition which at present very generally exists on the part of landlords, to diminish the number of tenants on their estates, and to increase the size of their farms. It is not here necessary to inquire into the reasons which influence them in this desire: it is sufficient for my present purpose to say, that, if such a plan were extensively acted upon, the result must be the total ruin of all the small holders and cotters, who, in many cases, are as industrious and deserving as any other members of society.

I consider myself most fortunate that I am not obliged to act, at present, upon the system above alluded to, and that my employers, however they may feel resolved not to continue on their estates persons of careless and indolent habits, are nevertheless determined to assist and encourage all those of an opposite character; and impressed with this kind feeling, are anxious I should make trial whether anything can be done to reclaim the one and to stimulate the other, and if possible, to put both upon some better plan of supporting themselves and their families, than they at present appear to be acquainted with.

The only way in my mind to accomplish this is, by introducing such a system of agriculture as would bring the entire of the small farmers' holdings into a productive state,



in place of allowing nearly half their farms to remain nominally in *grazing*, but in reality producing *nothing*; and, as this cannot be done without manure, and manure cannot be had without stock, the consideration naturally arises how can the *greatest* quantity of stock be most economically maintained, and under what management can the largest quantity of manure be derived therefrom.

Now, by referring to the experience of all good farmers in all countries, and under all circumstances, it is ascertained beyond dispute, that by the practice of sowing green crops, such as clover and rye grass, winter and spring vetches, turnips, mangel wurzel, &c., the same ground which in poor pasture would scarcely feed *one cow* in *summer*, would under the crops mentioned, feed three, or perhaps four the whole year round—by keeping the cattle in the house, and bringing the food there to them;\* and the manure produced by *one* of these cows so fed, and well bedded with the *straw* saved by the supply of *better food*, would be more than equal to that produced by *three cows* *pastured* in *summer* and fed in *winter* upon dry straw or hay, and *badly littered*.

Here then are two assertions well worthy your serious attention—first, that *three cows* may be provided with food in the house *all the year* from the same quantity of ground which will scarcely feed *one* under *pasture* for the *summer*; and secondly, that *one cow* so fed in the house will give as much manure as *three* fed in the field. I call these important assertions, for if they are really founded in fact, then any of you who may now be only able to keep *one cow*, would by changing his plan be able to keep *three*, and each *one* of these producing as much manure as *three* fed in the way you have hitherto been accustomed to adopt—the result must be, that you would have nine times as much manure by the new method as you have hitherto had by the old. Now, as I don't

\* The advantage of cutting the clover and bringing it to the cow, has been strongly exemplified this year, in the case of M'Parlane and Feenan, of Drumheney. They held a divided farm, and had exactly the same crop of clover, both in quantity and quality. M'Parlane cut his and fed *two cows* plentifully in the house. Feenan *grazed* his—and it proved a short allowance for *one*. And the succeeding crop after the clover is always much cleaner and better when it has been cut than when it has been pastured, though many farmers think otherwise.



think there can be a single individual among you, so blind as not to see at once the great advantage it would be to have such an immense addition to his manure heap, it appears to me that the best thing I can do is, in the first instance, to endeavour to impress firmly upon your minds the conviction that this fact, *so much entitled to your attention*, and yet so *little attended to*, is in reality a truth that may be relied on, and may be practically adopted without any fear of disappointment. It is upon this foundation that the practicability of almost every improvement I mean to suggest in the cropping of your land must ultimately depend; and it is therefore indispensable to the success of any arguments I may offer, to place it before you in the clearest point of view, and remove from your minds every doubt whatever upon the subject.

To draw the necessary proof, therefore, from what comes under *your own* observation, I may say every day of your lives, and which must therefore have more weight with you than any thing else I could say, I refer you with confidence to the exhausted miserable pasture upon which your cattle are now almost universally fed, *two to three acres* of which are often barely sufficient to keep *one cow alive* for the *summer months*, but *by no means to afford her a sufficiency of food*. Now, one acre of good clover and rye-grass, one rood of vetches and three roods of turnips, (making up in all two acres, which are now allotted for grazing one cow in summer) taking a stolen crop of rape after the vetches, will afford ample provision for three cows the *year round*. For you all know that an acre of good clover will house-feed three cows from the middle of May to the Middle of October; and with the help of a rood of vetches you will be able to to save half the first cutting for hay to use during the winter. Then when the first frosts, about the middle of October, may have stripped the clover of its leaves, the early sown rape, which ought to be put in ridge by ridge as the vetches are cut, and the land well manured, (if the seed has been sown by the middle of July,)\* will be ready to cut and feed the

\* If the vetches are too late to allow the sowing of the rape to commence at that time, it ought to be raised in a seed bed, and transplanted, which may be continued with advantage to the end of August, putting the plants in as thick as possible. Mr. Wil-



cattle until the turnips are ripe. Here then you have plainly provision secured until towards the middle of November; and we have to calculate what remains to feed the cattle until the middle of the May following. For this purpose there is a rood of turnips for each cow. Now, an acre of the white globe, and yellow Aberdeen turnip ought to produce from thirty-five to forty tons per acre; but supposing one-half to be of the Swedish kind, let us calculate only on twenty-eight tons to the acre, which is not more than an average produce, even if they were all Swedish, and see what that calculation will yield per day for one hundred and ninety days, which is rather more than the six months. If an acre yields twenty-eight tons, a rood will yield seven tons, which being brought into pounds, will amount to fifteen thousand six hundred and eighty pounds; and this divided by one hundred and ninety days, will leave eighty-three pounds of turnips for each cow, every day, which with a small portion of the hay and straw you are possessed of, is a very sufficient allowance for a common sized milch cow; and over and above all this, you have the second growth of the rood of rape coming forward in March and April, which would feed all the three cows much longer than would be necessary to meet the coming clover crop, even in the latest season.

Here then the facts of the case are brought before you for your own decision, and I fearlessly appeal to yourselves—is it true that two to three acres (I make my calculation on two only) are frequently allotted to graze one cow during *summer*; And again—is it true that an acre of clover and grass seed,

liam Scott, a tenant of the Earl of Charlemont's, who has been induced to try rape, from reading the first edition of this Address, asserts, that he has obtained from one square perch of transplanted rape, the amazing return of thirty-one stone five pounds, which would be nearly at the rate of thirty-two tons the English acre, and he would have two cuttings afterwards in March and May, supposing which to be only half as good as the first, there would be the enormous produce of sixty-four tons per acre—which seems so astonishing, that I questioned him particularly as to the fact, which he positively asserted to be the case, and that the ground measured was not superior to the rest of the field. If the rape, however, is too late, and therefore unfit to cut in October with advantage, the globe turnip will then be fully ripe, if planted in proper time, and the rood of turnips would hold out to the middle of April, from which time the rape would yield ample food until the clover came in.



a rood of vetches, and three roods of turnips, with the stolen crop of rape after the vetches, will fully supply food for three cows *the year round*? I defy any one of you to reply to either of these questions in the negative. The straw of the farm, in any case, belongs to the cattle; but in the latter case, where turnips are provided for food, it is chiefly used for bedding, and the additional quantity of grain which will be raised by means of the increased quantity of manured land, will always keep pace with the increase of stock, and provide the increased quantity of bedding required. I think, therefore, I am warranted in considering my first assertion proved; namely, that the ground generally allotted to feed *one* cow, will in reality supply food for *three*—and have now only to offer some calculations as to the accumulation of manure; which I hope will be considered equally conclusive.

During the summer months, your cow which is only in the house at milking time, (and perhaps not even then, for the practice is sometimes to milk her in the field,) can afford little or no addition to the manure heap, being upon the grass both day and night; and even in winter and spring, whilst there is any open weather, they are always to be seen ranging over the fields in search of food, so that I think you cannot but admit (upon a calculation for the entire year round,) the animal is not in the house more than eight hours out of the twenty-four, and it is only the manure made during this period which can be reckoned upon; therefore upon this supposition, (which I think is sufficiently correct to show the strength of my argument), if there is any truth in arithmetic, *one* cow fed as I calculated on, in the house for the entire *twenty-four* hours, will yield as much manure as *three* cows that are only kept in the house for *eight* hours—the quality of the food being supposed the same in both cases; and this would manifestly prove my assertion that *one* cow fed *within*, would give as much manure as *three* fed *without*: and therefore when *three* can be kept in the one way, as I have already shown, for *one* kept in the *other*, *it is as clear* as three times three make nine, that the result of the calculation will be just as I have stated—namely, that the farmer will obtain by the change of system nine times as much manure in the one case as he would have had in the other.

Now, if after all that has been said, (which seems to me at least quite convincing,) any of you should be so astonished



by the quantity of the manure thus proved to be gained, as still to have some misgivings on the subject, and be inclined to think that matters would not turn out so favourable in *practice* as I have shown in *theory*, I would wish any such person to consider one very material point which I have not yet touched upon—for in the foregoing, the argument is founded entirely on *the time* the animals are kept within, viz.—it is stated that *one* cow kept within for *twenty-four* hours will give as much manure as *three* cows which are only kept in for *eight* hours, the food being assumed to be the same in both cases; but it is quite evident, that if the cow kept within should be fed with turnips, and *bedded with the straw* which the others are *fed* upon, leaving them *little or no bedding whatever*, that the calculations must turn decidedly in favour of the animal which is well fed and bedded, both as regards the quantity and quality of the manure—so that it appears the estimate I have made is decidedly under the mark.

I may here be challenged to name any one who has really accumulated nine times as much manure in the manner I have stated to be practicable. My answer to this would be, that no one individual has thought it necessary to apply all the land formerly allotted to grazing his stock, to the *purpose* of raising *green crops*, to feed them on in the house. As fast as the manure heap has enabled them to do so, those who have adopted the house-feeding system, have been anxious to bring their useless grazing into *potatoes*, and *wheat* or *other grain*—enough of the old prejudice still remaining to make them think they were serving themselves by so doing;\* and *they have not given* the ground saved to the raising of turnips,

\* I am well satisfied in my own mind, that cattle crops will pay more at present in milk and butter than any other crops whatever, except flax or wheat; and if the farmers' wives could be prevailed on to put less salt in their butter intended for the English Market, the price would be greatly improved, and the Dutch butter would be driven out of the market. Should a farmer be induced to increase his stock, so as to make a firkin or half a firkin once a fortnight, the conveyance by steam is so rapid and so certain, that the butter might be safely exported to Liverpool or London, nearly fresh; and those merchants engaged in the trade would do a public service by bespeaking from the farmers of their acquaintance, butter to be made up in this manner, and to export it under a different brand, which would soon bring the matter to proof. See Appendix upon this subject.



mangel wurzel, &c. and of course have not kept cattle to consume them—but I fearlessly refer any doubtful inquirer on the subject, to go to the houses of those men who have gained the premiums offered by the Earl of Gosford and Col. Close, for the encouragement of house-feeding—Moses Greer of Corlust—Ingram of Drumhoney—John Hogg of Drumgaw, or James Bradford of Drumminnis, or any of the others most convenient to him, and let him examine *their manure heaps*, and examine *themselves*, as I have no doubt *they* have been upon many occasions, and then let him judge for himself, whether there is any reason to doubt the truth of what I have stated. But the case does not require that I should rigidly adhere to the strict letter of the argument. I need only ask you to think *what you might do* in your farms, if you had but six, five, or even four times as much manure as you now have; or rather let me ask *what is it you might not do* if you had such a supply; surely you would not in such a case let the land lie waste, as you now do, to recover itself, when you had the means of instant recovery in your own hands; nor would you rely upon *one* half of your farm to pay the rent of the whole, when you had the means within yourself of making the *other* half equally productive.

Having therefore, I think, set this matter at rest, I now proceed to state what perhaps may add much more to your surprise, namely, that many people well informed in these matters assert, the allowance of two acres of land which I have made, is by no means required for the support of *three cows the year round*, and that *much less* would do: and I confess that in making the calculation I have just laid before you, I have been allowing much more than I believe to be *absolutely* necessary—for this simple reason, that without going into the minutiae of what may be the very most that can be done upon a small piece of land, the advantage to be obtained merely according to the statement I have given is quite great enough to attract your attention, and put you, (if anything can) upon making some alteration in your present system: and the truth, both in theory and practice, of what I have pointed out is so obvious, that all possibility of contradiction or evasion, is completely set aside, which I consider a matter of no small importance. The allotment I have made of two acres for the support of three cows, is the same



as allowing two-thirds of an acre for each cow, which I have no doubt you will think is a moderate allowance, but to show you the opinion of very sensible writers who have made this subject their study, I beg to mention that Mr. Allan in his little work, entitled “Colonies at Home,” estimates the ground necessary to supply food for a cow the year round, at only *half an acre*, and Mr. Cobbett, in his work entitled “Cottage Economy” says, that *one rood* of ground will be found amply sufficient. For the particular plans pointed out by these writers, I must refer to their own writings, but will venture to remark, that, to the instructions given by Mr. Cobbett may be added a recommendation to have the cow carefully curried, which is necessary to the animal’s health when kept in a state of confinement, and will materially increase the quantity of milk;\* and her food might be given to her in a small straw yard for a portion of the day, for the sake of exercise; or she might be put out upon a tether to graze for an hour or two, in good weather, if the farm afforded a suitable place. And I would also strongly recommend particular care to be taken in transplanting the turnip plants—to raise them without breaking the smallest fibre of the root, by putting the spade completely under them, so as to loosen the earth about them, and in putting them into the ground, to take the same care that the roots are placed in the natural position, and not doubled in. Without attention to these points, the crop will be injured; indeed, it is so seldom that transplanted turnips produce, *in this country*, the crop Mr. Cobbett calculates upon, that I should prefer your applying half an acre, or even two-thirds of an acre to the support of your cow, in order to enable you to sow your turnips in the

\* When cattle are so tied up that they cannot lick themselves, as is in general the case in stall-fed cattle, the itching becomes so great that they lick themselves, when they have the power of doing so, until they create a sore which injures the flesh. Cattle kept in such a state of continual irritation, cannot, I think, thrive as they otherwise would be likely to do, and shows the necessity of frequent currying, or being allowed the liberty of a straw-yard for an hour or two in the day. In corroboration of this doctrine, I have heard that the practice in Berwickshire is to have stalls calculated to hold two—one half of the stall being under cover, and the other not, so that the cattle not being tied up, are left at liberty, to consult their own comfort, and in this way they are found to thrive much better.



usual way ; or instead of them, mangel wurzel, where the ground is suitable ; and if half an acre, or two-thirds of an acre, with the addition of a trifling quantity of straw, will insure an ample supply of food for a cow during the entire year, I think none of you will consider the ground misapplied. It is so hard, however, to get persons unaccustomed to be directed by printed instructions, either fully to understand them, or if they do, to put them in practice, that although I allude to the directions given by these writers, for the instruction of all who may chuse to adopt them, and particularly for the benefit of cotters who only have a house and garden, my own opinion is, that the simple plan I have laid down, which every small farmer can easily comprehend, and can as easily carry into practice, without interfering in the general cultivation of his farm, is the best system to recommend to you for adoption ; and I think it is quite evident from what has been said on the subject, that if you take advantage of the kail and cabbage\* which you may raise in your gardens and potato ridges, as will hereafter be pointed out, together with the additional stolen crops which may be raised in the rest of your farms, of rape, stubble turnips, or annual clover, after the crops of grain, or on the early potato and vetch ground, as pointed out under the head of rotation of crops, that the quantity of land *specially* applied to the feeding of your cattle, may be reduced to the half acre, which is the quantity Mr. Allen calculates upon. It appears to me, therefore, quite undeniable, that the foregoing can be carried into practice, and if so, and upon a plan which requires no particular trouble or skill in the management, how shameful is it for you often to let two, or perhaps three acres of land be wasted as I have stated, to graze one animal in summer, and to have her starving all the winter, upon bad hay or fusty straw. The importance of house-feeding your cattle seems to me so great, and I have therefore said so much in regard of it, you may perhaps suppose the subject exhausted, and that nothing more can remain to be added ; but I have still something to mention, which may perhaps appear to you more surprising than anything you have yet heard : namely,

\* Mr. Matthew Hilton, agricu'turist to the Marquis of Ormonde, informs me that Drumhead Cabbage sowed in February, and the plants put out in May and June, will keep all through the winter.



that you will have more profit by your cows if you feed them on green food, *and pay a fair price per acre for it*, than if you fed them upon the hay and straw you generally give them, *and got the said hay and straw for nothing*. This I have no doubt will appear a very strange assertion, but it is not at all more strange than true; and to prove it I refer to the case of James O'Neill of Garvagh—This man was a complete pauper when Lord Gosford bought the Graham Estate; but, by the assistance and instructions afforded to him, had got his small portion of land into a good state, and last summer I lent him a cow, seeing that he would be able by proper attention to have kept her in the house all the year. He had not been possessed of one for years, perhaps never in his life; but his conduct did not afterwards show him to be deserving of what had been done for him.

He would not sow his rape in proper time, as he was desired, and I was at last obliged to discharge him from the work at Gosford, before he would be at the trouble of doing so. This neglect occasioned the crop to be late coming forward in spring, and having wasted his turnips, in beginning to them before they were ripe, and using them extravagantly, they were all finished before the rape was fit for cutting. This being the case, he turned his cow into the rape to graze, by which the crop was completely destroyed; and this failing, he put his cow to graze upon the young clover. This being soon eaten down, I found the animal eating the tender shoots of the young quicks, in one of the new made ditches, when upon enquiry, all the foregoing circumstances came out. Being provoked at such conduct, I ordered the cow to be sold; but when the day of sale came, he was able, from the improved state of his farm, to get one of his neighbours to go security for the payment of his arrears, his rent, and the price of his cow; and, also, that he would buy rape elsewhere, and feed his cow in the house, as I required; upon which I did not persist in my intention of selling her. He, accordingly, bought a small piece of rape ground, (ten Irish perches, or seventy yards long, and two yards broad,) which, with a little dry fodder, kept his cow in full milk for thirty days;\* and, upon that

\* The immense produce of rape, when *well manured*, is beyond any thing almost that can be imagined, if let stand until it gets into



feeding, gave fourteen quarts daily, whereas, upon dry food she had fallen off to half the quantity.

I state these particulars to show you the folly and blindness of this man to his own interest. By neglecting to sow the rape in *proper time*, it was not ready to supply the place of his turnips, and every thing went wrong by this first neglect, which appeared to him of no importance. If the turnips had been properly managed they would have lasted *longer*—if the rape had been properly treated it would have been ready *sooner*; and, if it had not been trampled down, would have lasted until the clover supplied its place, and every thing would have answered in its turn. Now he has been obliged to buy from others, at the rate of fully £10 an acre, that rape which his own land would have supplied him with in abundance, and he has injured his clover so that he will lose half the benefit of it. But the advantage of the rape is seen particularly in this, that, notwithstanding the high price he paid for it, it was better for him to buy it than to feed his cow on *straw*, even supposing he had got the *straw* for *nothing*, which is very easily demonstrated;

	s.	d.
For the fourteen quarts produced by the rape feeding, at $1\frac{1}{2}$ d. a quart, comes to	...	...
The price paid for it cost only 2d. per day, to which add half a stone of straw, 1d. (being at the rate of 16d. per 112lbs. which is above the general price of that article,) and the expense, daily, comes to	...	...
	0	3
Leaving a clear profit, per day, arising from feeding on rape, of	1	6

Now, when the cow had been fed on straw, she only gave seven quarts, and very soon would have given still less, the price of which, daily, would be only  $10\frac{1}{2}$ d.; therefore, if he got the straw for *nothing*, he would only have  $10\frac{1}{2}$ d. a day by the cow; whereas, after *paying for* the rape, he gained 18d.; but if he had to pay for the straw—the cow would require three stones, which, at 16d. a cwt., would be 6d.;

blossom, which was the case in this instance. Manure makes the stalk tender and juicy, which would otherwise be hard and dry, so that if cut into small pieces, not a bit will be lost, and it grows to a height of six feet. I am almost afraid to say that I believe, with the addition of some straw, an acre will keep thirty head of cattle in full milk for a month.



and deducting this from  $10\frac{1}{2}$ d. (the price of seven quarts of milk)—there would only be a profit by the cow of  $4\frac{1}{2}$ d. a day, in place of 18d. a day yielded by the rape. The same thing may be proved in regard to turnip feeding in winter. If a cow calves at November, and is fed on turnips, she will keep up her milking; but, if fed on straw, she will fall off immediately to half the quantity. Now, allowing the acre of turnips to be worth £10, which is more than any other crop generally produces, and reckoning the produce at thirty tons, (although, by good cultivation, Mr. Mitchell had fifty-five tons to the acre last year,)—

The five stone of turnips, which I reckon good daily feed-				
ing for a milch cow, would cost	...	...	...	$2\frac{1}{2}$ d.
And a stone of straw would cost, at 16d. a cwt.	...	...	...	2
Total cost per day for turnips and straw				<hr/> 4½d.

whereas, three stones of straw, which she would require if fed on straw alone, at 16d. per cwt. comes to 6d. a day; so that, by the use of turnips in winter, it appears you can feed your cow (after allowing £10 an acre for the farm) at  $1\frac{1}{2}$ d. a day less than upon straw alone, and you get double the quantity of milk. So that one cow fed in this way yields you fully as much milk as two would give, fed on straw, and the manure is also twice as valuable. This ought to show you all the error you fall into. When you talk of *keeping* a cow all the winter upon straw, you merely talk of *keeping* her *alive*—but your object should be to keep her so as to yield you a *profit*; and this can only be done by *keeping her on moist food*, which, I have shown you above, it is more profitable for you to do than to feed her on straw, *supposing the straw was made a present to you*.

Now, as such a small space may be made to support a cow by green crops and house-feeding, suppose that any industrious cotter should turn his small patch of ground to that purpose, and even admitting him to have no means of even getting straw to bed her with, yet if he is attentive to gather the weeds growing on the road side, or in the fields adjoining, and use them as a substitute, he will find sufficient to increase the quantity of manure to such an extent, that he will have no difficulty in getting from his less industrious neighbours, ground to put it out upon, and thus get a crop of



potatoes, amply sufficient to support his family, upon very moderate terms—the quantity of manure thus obtained from a cow well fed and kept constantly in the house, being greater than what any one who has not made the experiment will believe ; but if the cotter, instead of enriching the land of his neighbours, should have even a field or two of his own, the constant supply of manure would so improve the quality of the soil, that it would yield twice as much as in the way now usually practised ;\* and, having only a small rent to pay, he would soon become able to buy an acre or two more, and thus gradually advance himself to the rank of those small farmers to whom I am now addressing myself, and would very shortly be possessed of that quantity of manure which would enable him to enter upon a *proper rotation of crops* ; without attention to which no farmer, great or small, can get the full return from his land which it is capable of affording.

To make you sensible of this, I would wish you, for sake of example, to suppose a small farmer, holding eight acres of land, having acquired a stock of manure sufficient for one fourth part, or two acres—he is then able to commence the following rotation : these two acres are, the first year, planted with green crops, in which are included potatoes, turnips, cabbages, mangel wurzel, &c. according to the nature of the soil and other circumstances. The next year he manures two acres more ; and does the same the third year ; and in the fourth year the whole farm has been gone over ; and, after each manuring, the two acres so manured are occupied with the following succession of crops : first year, green crops, as already stated ; second year, oats, barley, flax, or wheat, with clover ; third year, the clover to be cut and brought to the cattle, making into hay whatever may be to spare ; fourth year, oats, wheat, or barley. The fifth year the same rotation commences again, and the one-fourth part is again placed in green crops and well manured, and the other crops succeed as before. By this means it is evident the farmer gets *four* productive crops from one manuring, and has always *one-half* of the entire farm, viz. *four acres*,

\* This has been clearly made appear by the enormous produce of small patches of land cultivated under the allotment system, patronised by the Labourers' Friend Society, and stated in their interesting publications.



in grain; one-fourth, or two acres, in clover; and one-fourth, or two acres, in potatoes, turnips, &c., which is much more than any farm yields according to the present system.

In order to make this rotation more simple, and less likely to confuse you, I have desired *all* the manured land to be laid down with clover, along with the first grain crop; but it is open to the farmer to sow only *half* in clover, and put the other half in vetches,\* Italian rye grass, or cabbages, if he should wish to have greater variety of food for his cattle, which is always desirable. *The only thing insisted upon is, that two crops of grain are not to be sowed in succession upon the same ground.* It is also to be observed, that the plenti-ness of manure obtained by this system of house feeding, will enable you to manure the stubble of the last grain crop, and sow or transplant rape, which will yield a full return, and be off the ground in time for your potatoes and turnips, which, upon the foregoing plan, always succeed the second grain crop.† And the quantity of food for your cattle may be still increased, by planting with your potatoes, curled kale on the north edge of the ridges, in such manner as that the mid-day shadow may fall in the trench, and planted three feet asunder, a material addition to the autumn and winter feeding will be obtained without injury to the potato crop: and I have seen them left standing in the furrows even after wheat had been sown, and yielding abundantly.‡ But if this should be objected to, they may be cut down and transplanted into any corner of the farm, to go to seed, which will sell for double the money, perhaps, which any

\* In this case the grain, when cut, should be immediately stooked upon the side of the field sowed in clover, and winter vetches put in without delay, and as they are cut the following May and June, vetches should again be put in, ridge by ridge, as the others are cut; these will be ready for use from October to December, and will leave the ground fit to bear any crop.

† Potatoes seem to succeed better than Turnips, but Vetches or Italian rye-grass for October feeding is perhaps as profitable as any, particularly where manure is scarce.

‡ Experience seems to be in favour of planting the cabbage in place of kale; which will be kept in mind where kale is mentioned elsewhere. (See Jenkins's account in the Appendix.) Cattle will eat even the stalks of the cabbages if cut into very small pieces.

other equal portion of the farm will produce. I wish it, however, to be particularly understood, that I recommend the foregoing rotation, merely as a great improvement upon the present practice, and likely to be very generally attended with success, but not as the best for *every* soil ; for I am perfectly sensible the varieties of soil, and of circumstances are so numerous, that there is no possibility of laying down any plan to suit all cases ; and I have, therefore, thought it better to obtain the assistance of an experienced farmer, who will call upon you for the purpose of personally inspecting your farms, and giving instructions suitable to the nature and condition of each, not only as to the rotation of crops, but also as to the mode of preparing the ground and putting them in ; and also how to cultivate them afterwards ; which accurate information, I am of opinion, *nothing but personal communication can supply*. Under such circumstances one would naturally expect to see the instructions given most implicitly obeyed ; but in place of this, I have been provoked, year after year, with the stupid obstinacy of many, who in spite of all that can be said to them will delay to thin out their turnips, waiting until the plants may afford a mouthful for their cattle, when by so doing they injure the crop in a manner they will not believe. I have the same complaint to make of the inattention shown to keep down the weeds, and to keep the ground loose about the turnip plants in the early stage of their growth ; and indeed as long as any implement can be with safety used for that purpose. I am in hopes the importance of attention in these points is at last beginning to be understood, and that I shall not much longer have the same complaint to make ; and beg reference to what is said upon this subject by Mr. Bruce in the Appendix.



## CHAPTER. II.

Directions for the Preservation of Health—Advantages of Cleanliness and Ventilation in this respect—Danger of neglecting them in cases of infectious complaints—Recommendation of Temperance Societies—Great Saving by refraining from Dram Drinking.

ALTHOUGH personal inspection and personal instruction must always be most valuable, yet there are, nevertheless, certain fixed principles which every farmer is bound to attend to, and which never should be lost sight of, and these I shall shortly enumerate ; but first, I should wish to say a few words as to the preservation of health, without which, the small farmer and cotter are entirely incapacitated from taking advantage of these or any other means to better their situation.

In this respect, I would recommend to you, most earnestly, immediately to remove all stagnant water, filth, and putrid substances, from the fronts of your houses, in order that the door, which is often the only mode of ventilation, may admit pure air. If the floor within is lower than the land without, let a trench be cut all round, to carry off the moisture, and make the house as dry as the nature of things will admit. Let the windows be made to open, so that every part of the house may be thoroughly ventilated ; and let the inside and outside, but particularly the inside, be whitewashed as often as can be conveniently done, and let the most minute attention be paid to cleanliness. With these precautions, the health of a labouring man may generally be calculated on, except in cases of fever or other infectious complaints, and even against these the foregoing recommendations will be a great protection, *if strictly attended to*. But should any member of the family be attacked by any complaint of an infectious nature, there is little chance of preventing its being communicated to every one in the house, *if they are neglected*. The fresh air must be freely admitted ; the walls whitewashed, and every thing in the house, of furniture, bedding and clothes, washed and put out, and exposed to the sun and air,



and hot lime put on the floor, if there is any damp, to dry it up. When a person is ill of an infectious complaint, the whole air around him is infected, and it is only by admitting the pure air from without, to dilute it, if I may use the expression, that the infection can be so weakened as to prevent bad consequences to those who breathe it. From not attending to this, many complaints, which, at the beginning, were not infectious, become so afterwards; and whole families are carried off, or put past labour, from neglecting precautions which might so easily be taken. It is observed, that infectious diseases seldom spread in the houses of the upper ranks of society, and it is merely owing to the admission of fresh air, and the cleanliness which is observed: and the same will account for the safety of physicians and attendants in hospitals, where there are hundreds of patients collected; whereas, if fever once gets admittance in a poor man's cabin, the infection is preserved by the moist and putrid matter without, and the damp and dirt within, and is rendered more and more malignant by the want of a circulation of air, until, in general, it attacks the whole family; and, even if it does not occasion their deaths, it so weakens their strength, and, by repeated relapses, continues to hang over them so long, as eventually to reduce them to poverty and wretchedness; all which, in most cases, would probably have been prevented by a timely attention to what has been here recommended.

But cleanliness and ventilation, however valuable they may be as the means of preventing or banishing disease, cannot be as effectual as they ought to be, whilst the use of ardent spirits prevails in the degree it now does.

I need not take up your time in expatiating upon the consequences attending this ruinous practice—those who are even most addicted to it are fully sensible of its injurious tendency, but think it is in vain to struggle against it. Nothing, however, can be more contrary to facts and experience than such a belief. It is only a few years since some benevolent people in America first started the idea of forming what are called *Temperance Societies*. The hopelessness of such an undertaking was so much the belief of the public, that the attempt was ridiculed as absurd and visionary; but it has, nevertheless, proved quite the reverse. Thousands have been thereby reclaimed, and are now enjoying a degree of comfort and happiness before unknown to them. Even



among sailors, (a class of people least likely to be operated upon,) members are now enrolled, and *temperance* ships are manned from New York, without difficulty, for the longest voyages. From America the plan has extended to Scotland, and *temperance* ships are now, in like manner, sailing from Glasgow, and numerous societies are spread over the face of the country. From Scotland, the plan seems to have crossed over to the North of Ireland, and societies are already in existence in this very country; therefore, with such numerous examples of successful resolution before you, both abroad and at home, I must earnestly beg of you to make the attempt, and trust you will not show less firmness than so many others have proved themselves to possess. Subjoined you will find what a list of desirable articles of clothing may be bought with the money, which it would cost you to indulge in a single glass of spirits daily. When you read it over, think of the short-lived, selfish gratification you derive from the practice, and think of the *permanent* comforts of which you thereby deprive yourselves, your wives, and your children, and at once determine to abandon the use of spirits; and, take my word, you will soon find the benefit of it, both in your health and circumstances.

ONE GLASS OF WHISKEY PER DAY, commonly called by drinking men, "*their morning*," costs (at three halfpence per glass,) no less a sum than two pounds, five shillings, and seven pence halfpenny, *yearly!* which sum, if laid by, would provide the following comforts and necessaries of life for a family, viz. :—

One pair of large blankets	..	..	£0	10	0
One pair of sheets	..	..	0	6	0
Two pair of shoes	..	..	0	12	0
Two shirts	..	..	0	4	0
Two neck handkerchiefs	..	..	0	1	1
Two pair of stockings	..	..	0	2	3
One hat	..	..	0	5	0
Cloth for trowsers, and making	..	..	0	4	6
Change remaining	..	..	0	0	4½
			<hr/>		
			2	5	7½

### CHAPTER III.

Maxims of universal Application in Farming—as to Draining—Destruction of Weeds, Cropping—Management of Manure Heaps—Squaring Enclosures—Levelling useless Ditches—Horses not suitable to Small Farms—Consumption of Straw in Thatch.

HAVING said thus much upon the foregoing subject, of such first rate importance to the labouring classes, I proceed to give a list of those maxims in farming, which are of universal application, as far as I have been able to collect them :

1st. The ground must be thoroughly drained. For this purpose it is not sufficient to cut drains in the low grounds ; but the springs must be sought for as high up as any symptoms of them can be discovered, and the water conveyed from them, and not allowed *to force its way through the soil* ; in which case it will destroy the effect of any manure which may have been applied. In proof of which, you may always observe, in such situations, the grain in that part of the field ten or fourteen days later than the rest of the crop ; and in very late seasons it may, perhaps, not ripen at all.

2dly. The weeds must be destroyed ; which in a little time will be accomplished by proper attention in collecting, as far as possible, all weeds, *before* putting in the crop, and by sowing the green crops in drills,\* and carefully weeding them afterwards ; and they may even be made worth the expense of gathering, as they will yield a valuable addition to the manure heap, if applied as bedding in the cow-house. For this purpose, they should be collected before flowering. It is shameful to see, in many fields, the quantities of rag-

\* I have already mentioned the practicability of getting an early supply of the leaves of curled kale in autumn, by planting them with the potatoes in the edge of the ridges, and I should think that to be the best plan for such a purpose : but to plant the potatoes in drills is a much more effectual way of cleaning the land, and is, therefore, much to be preferred on that account : and curled kale or cabbage for winter use may be cultivated in this way, by planting them at the edge of the broad ridges, as hereafter recommended.



weed ripening to seed, and impoverishing the ground as much as a crop, which might, if usefully applied, as above directed, have brought nourishment to the soil, in place of exhausting it.

3dly. All cattle must be fed in the house or straw yard, upon good food ; such as rape, cabbage, turnips, mangel-wurzel, potatoes, clover, and vetches, in proper succession, will abundantly supply, according to the nature of the land ; there being no farm in which some of these crops may not be raised in abundance, with the aid of manure, which the practice of house feeding produces.

4thly. Never take two crops of the same kind in succession off the same land, although this is sometimes done with potatoes, to reclaim land that has never been in cultivation ; but in other cases this is not advisable ; and, in particular, two grain crops cannot be taken in succession without injuring the soil, and in the end a manifest *loss* arises from the practice, in place of that *advantage* which the needy farmer looks for ; because, by interposing a *green* crop, such as clover, &c., full as many *grain* crops may be had off the same piece of land, and from the same manure, in any given number of years, by taking them in *rotation*, as by taking them in *succession*. But the rotation system has this advantage, that while you get as many grain crops, you keep the land always in good heart, and between the crops of *grain* you get *green* crops equally valuable. This is accounted for by considering that no two crops derive the same particular nourishment from the land. The roots of some sink deep, and draw their nourishment from the bottom, while others spread on the surface ; and it is generally believed that plants derive their food and support from as different ingredients in the earth, as the different kinds of cattle derive their food upon the surface. Horses will eat grass which cows reject, and so with every description of cattle ; and supposing the analogy to hold good in plants, it is easy to conceive that a change of crop may find the soil abundant in that kind of nourishment which it requires, although it might be, at the time, exhausted of that kind required by the crop which had gone before ; and thus the ground may be as much restored by the introduction of a *green* crop after a *grain* crop, as if the ground had actually lain fallow ; and experience, in a great degree, justifies this reasoning.

I am fully sensible, however, that a system of over cropping



with grain will extract *every kind* of nourishment from the soil, and leave it so that *it will not even yield grass*. This is the case with the land which is left to *rest*, as it is called, by those who take three or four grain crops in succession ; and the phrase is well applied, for the land is really not fit to *do any thing*. The error of this class of persons is, that they turn the land to grass at the *end*, in place of the *beginning* of their course. Had *grass-seed* been sown with the *first crop of grain*, there would have been a good crop of hay, and good after-grass, and the second crop of grain would have been as good as the first ; and this is what ought to be done by those whose land is not suited to clover, or who, from poverty, are not able to buy the clover-seed ; and even where *two* grain crops have been taken, it would be better sow it with rye-grass, which will yield a crop on very poor land, rather than leave the land to be possessed by weeds, and such herbage as may naturally rise. The fact is, the last exhausting crop should only be put in upon the portion of the farm which is intended for potatoes, and other green crops, the succeeding *year* ; which crops then give the manure to restore it to a productive state ; and by this means there is no land at all lost by what is called *resting* it.

5thly. The place for manure should be contrived so that it should not be exposed to any accumulation of rain water, but should receive the contributions from the sewers of the house, stable, cow-house, &c. The bottom should be paved, so that the drainage of the manure should run into a small cask or well adjoining it. Fresh *earth* should be regularly brought and spread over the manure, and the liquid in the well should be thrown *over it* ; by which means the whole compost would be equally rich, and the quantity increased to any extent that could be required ; and the steam or smoke which arises from the stable manure, and which is the very richest part of it, would be kept under, and imbibed by the earth so laid on, and the quantity of the earth should be proportioned to the strength of the dung with which it is mixed. While speaking of manure, it may not be amiss to remark the great loss arising from the practice of letting off the water in which flax has been steeped, which if sprinkled over, or made into compost with fresh earth, would be found most valuable.\*

\* At the time the flax is taken out of the steep, all the rivulets in the country are strongly impregnated with the contents of the flax-



6thly. It should be the object of the farmer, as soon as he possibly can, to have his fences made in straight lines, and of as great length as the farm will conveniently admit of. It is almost inconceivable the quantity of time lost by the frequent turning of the plough, and the quantity of land thrown out of cultivation, by having a crooked irregular fence, the bendings of which the plough cannot follow.

7thly. A farmer who has any understanding must perceive, the moment it is mentioned, that every unnecessary ditch is so much land lost, and that his care ought to be to have as few of them as possible; and it will, therefore, occur to him, that if he feeds his own cattle in the house, all his ditches may be dispensed with, except the mearing ditches, which are necessary to keep out those belonging to other people; and this would enable him to raise hedge-rows, which never can be done if the cattle are turned out, the value of which, for shelter to his crops, and supplying him with timber for all country purposes, is most important.\* The loss of land from useless fences is greater than any one would suppose who has

holes, and those through whose lands such rivulets pass, would do well to turn the stream, where it can be done, over their after grass, or use it in watering their cabbage, turnips, &c., the advantages of which would soon be perceivable. The richness of flax water is fully shown by the growth and colour of the grass where flax has been spread to dry. I have seen a most luxuriant crop of oats upon land irrigated with flax water, although a SECOND crop; which shows that if this manure was preserved, one of the greatest objections to the growth of flax would be removed.

\* When a thorn hedge is planted, the lateral, or side shoots, should only be trimmed, until the leading shoot has attained the full height you wish it to grow to; if the leading shoot is cut sooner, the hedge will never acquire the same strength. Cutting the lateral shoots is quite sufficient to keep it thick at the root, if properly weeded; and if trimmed every year, it will become so solid that birds will not find shelter in it: thorns may be leared down so as to fill any blanks that may have taken place, and if a part of the bark is left uncut, they will certainly take root if covered with earth; or the hedge may be doubled, and rendered quite impenetrable, by learing back the entire hedges cutting the stems but half through, and covering them with earth. By this treatment there will be a young growth from the root part, the same as if it had been entirely cut, and there will also be a growth from the lear which has been carried through the back of the ditch—the earth removed by so doing being again replaced. This I have seen most successfully practised in the grounds of the Rev. Francis Gervis, of Cecil, county of Tyrone.



not considered it ; and I would almost venture to say, there are farms in this country of twelve acres, in which the ground lost between the trench or gripe, and the backs of the ditches, together with that lost by the crookedness of the line, would amount fully to one acre, or one-twelfth part of the whole.\* Now, supposing a farmer to pay thirty shillings an acre for his land, he of course loses thirty shillings annually by this waste of the surface, which is equal to two shillings and sixpence an acre upon an entire farm. It is quite evident, therefore, that these ditches should be piped and levelled in, which would have the additional advantage of relieving the crops from the vermin to which those ditches afford a shelter.†

One argument generally used against levelling all inside ditches is, that the cattle cannot be turned out to eat what is called the *fog*, or food which is to be found among the stubble after harvest ; but the gain supposed to be derived from this practice, is very much overrated. In the first place, ploughing it down immediately will be of much more use to the land than any advantage to be derived from it as food ; for a cow turned out in a cold or wet September day will be put back in her milk more than would pay for her entire day's feeding in the house. Secondly, upon *clay* soils the injury done to your land by the tramping of the cattle, besides the water retained so injuriously in their tracks, is beyond any thing you can have any idea of. Consider for a moment, and ask yourselves, why it is in the light sandy or gravelly soils, that sheep farming is found so beneficial. You are perhaps not aware

\* I have known people object to this, by stating all the trouble they had taken, and the labour they had expended in making them ; but if you were to meet with a man who on a journey had gone out of his road, and you pointed out to him his mistake, would you not think him very absurd if he refused to turn back, merely on account of the labour he had undergone in walking so far astray, and rather persist in going wrong, than turn about to go right ? It is just the same with the man who objects to level the useless ditch—he has gone wrong, and refuses now to be set right.

† There is no change whatever that will at once produce such an improvement in the appearance of a country as the levelling the crooked fences, and enlarging the enclosures : in proof of which, I would refer you to the appearance of the Glebe land in Mulla-brack, and the farms of Bradford and M'Cammon, in Druminnis, and Cullons and Mallon, in Ballindaragh. The improvement is such, that no one who knew these lands formerly would recognise them to be the same he had then been acquainted with.



of it, but if you went to Scotland you would see upon soils of this description, hundreds of acres sowed with turnips, intended to be fed off by sheep, folded on the ground, principally with a view to have the lightness of the soil corrected, from their tramping it into a kind of paste by the constant action of their feet; and owing to this process, the farmers there obtain a tenacity of soil, which enables them to grow afterwards corn crops, which their land would otherwise never yield: but in a clay soil there is too much tenacity belonging to it naturally, and, therefore, tramping, which makes it still more tenacious, directly and most decidedly injures its fertility. The extent of the injury thus occasioned, may in some measure be imagined, by considering the effect produced by the tramping of so light an animal as a sheep; and from that to calculate what effect must be produced, by the weight of a cow, an animal so much heavier. The fact is, clay land poached in this way is so puddled, if I may use the the expression, that every track is water-tight, which shows that the soil is completely closed against the influence of the atmosphere; the bad consequence of which is exemplified in note, p. 35.\* I wish to address myself to your natural good sense, and would ask you, if the use of lime and manure, which you are all fully aware, makes land of this kind loose and open, and by so doing, renders it fruitful: must not upon the same principle, the tramping of cattle, which has the opposite effect of binding and compressing the soil, render it *unfruitful*, and counteract the effects of all that lime and manure, which at so much expense and labour, you have, perhaps, but a year before laid on it? I trust, that by representing this inconsistency, you will abandon the practice; and for a proof of the truth of the observations I have made, I will confidently refer you to the appearance of the soil, when ploughed up from clover lea which has not been pastured, compared with that which has; or with stubble land which has been trodden down by cattle in the manner I object to.

8thly. It requires a farm of fully fifty acres to give sufficient employment to a pair of horses; perhaps sixty would be nearer the truth; and, therefore, if a farmer even ploughs in partnership, he ought to have twenty-five or thirty acres. I here speak of those who have no other employment for their

\* See this subject more particularly alluded to, towards the conclusion of sixth chapter.



horses than what the cultivation of the farm affords.\* There are, however, cases where the distance of fuel, and distance of lime, may make a horse necessary when it might not be otherwise. All *small* farmers ought to use the spade, for many reasons. It costs but little more, even if he has to hire assistance, and does the business better, and the crop is better. In all drill crops, also, by using the spade, he may put in a quicker succession of crops, and have one coming forward as the other is ripening. In wet seasons he can dig, when he cannot plough; and its value, in turning up stiff clay lands in autumn, and exposing the soil to frost and snow, is scarcely to be imagined; and in all such lands *this plan* should be pursued where no winter crop is put in.

9thly. In all wet lands, and where the clay is retentive, the ridges should be narrow; which may, indeed, be almost laid down as a general rule, in a climate so moist as this; but where the land is sufficiently dry, the broad ridge is preferable.

10thly. No hay or straw whatever should be sold off the farm. In England this is strictly forbidden by lease, and the tenant who did so, would be supposed to have an intention of running away. If the cattle were home-fed, as here recommended, all the straw the farm can be made to produce will prove little enough; and for this reason, as soon as the farmer is in circumstances to enable him to do so, it would be his interest to slate his house and out buildings, which, in the end, would be found the cheapest roof, and would preserve, for the use of the farm, the large quantity of straw which is annually consumed in repairing the thatch.

\* Martin Doyle estimates the ground required to feed a horse, at two acres, and the value of food and other expenses at £20. 8s. 2d. yearly. The small farmers in the counties of Down and Antrim adopt the plan of buying a young horse, rising three or four years old, and, having used him in their spring labour, they sell him off in May or June; and the natural improvement in the animal at that age, generally leaves them a profit, besides getting their labour done for the keep.



## CHAPTER IV.

General Observations upon the mode of Cultivation at present in use as to Potatoes, Turnips, Flax, and Wheat—Advantage of laying on Lime with the Potato Crop, and giving house manure to raise Turnips—Necessity for stopping the spread of Ragweed, Coltsfoot, and Thistles, by means of the seed—Use of Chaff as an alterative for Cattle.

HAVING laid down these general maxims, the propriety of which I think you cannot but admit, I should wish to lay before you some observations which have occurred to me in visiting your farms : the first I shall make, is upon your mode of ploughing old lea for oats ; when this is done, you form so many hinton by ploughing each ridge separately, that nearly a seventh part of the entire surface is stripped of the good soil, and when the crop comes up, you will see the braird confined almost exclusively to the middle of the ridge, where the good soil is gathered in, and though it afterwards spreads, still a very considerable loss arises : now, if instead of ploughing each ridge by itself, you would take in six or eight, you will still preserve the land in the same form, but there would be only one hinton in the whole, in the place of one for each ridge ; so that the surface not being deprived of the good soil, would give the crop evenly over its whole breadth. You should also observe in all ploughing for grain, to be particularly careful to turn over the furrow slice, with such an inclination that the top exposed to view should, as nearly as possible, resemble a ridge stone in appearance ; by which means the furrow slices will pack close, so as to prevent any seed escaping, and the angle at top will afford sufficient mould for the harrow to turn over and cover the seed.

This inclination of the furrow slice is very material, and produced partly by the shape of the mould board, and partly by the skill and judgment of the ploughman, proportioning the *breadth* properly to the *depth* of the furrow slice ; the *broader* this is in proportion, the more flat the slice is



left, and the narrower it is the more upright ; and the closer the coulter is adjusted to the sock, with a slight inclination to the left, the more perfect the angle or comb, as it is termed, will be at top.

Next, as to your potato crop, which ought to follow your oat crop after lea—your present mode of cultivation is either in ridges or drills: the advantages of the former is said to be, that the potatoes are of better quality, but it is generally admitted, the produce is not so plentiful—that it always requires a great deal more manure—that the weeds cannot be so well eradicated, nor the ground so well fallowed as it is by the latter—and also, that in dry seasons, any partial fall of rain runs off without reaching to the roots of the plants. On the other hand, in the drill way, the potatoes, generally speaking, are more plentiful, but they are not usually so dry, and in rainy seasons they are more liable to be injured by superabundant moisture. Now, a mixed system of cultivation appears to me likely to unite the advantages of *both*, and to be free from the disadvantages of *either* ; and I recommend, for this purpose, that you should throw your land into broad ridges, of twelve to fourteen feet, and then plant your potatoes\* in regular drills across them, slanting the course of

\* It appears from a series of experiments given in the Second Edition of the *Encyclopædiæ Metropolitanae*, that *drilled* potatoes yield the greatest produce when planted in drills thirty inches asunder.

The experiment seems to have been made with great care, the potatoes used were pink eyes, and the manure forty cart loads per acre, and fresh horse-dung was tried against rotten cow-dung. It deserves to be noticed, that the produce from the fresh horse-dung and rotten cow-dung was not equally affected by the spaces between the drills ; for example,

		Horse-dung.		Cow-dung.	
At 30 inches apart produce		66	bolls per acre,	66	bolls per acre.
24	————	60	——	61	——
18	————	51	——	60	——
12	————	47	——	42	——

I believe the distance between the drills, ought to be regulated by the length of the stalk, which depends on the kind of potato and the strength of the manure, and that the drills ought not to be closer together than the length of the stalk ; this would generally give twenty-six to twenty-eight inches for the distance, and if highly manured fully thirty inches, except in such early kinds as ash leaf, kidney, &c. which are dug before fully ripe.

Some opinion may perhaps have been expected as to the cause of



the drill according to the lay of the land, so as just to give sufficient fall to the furrow to carry off any moisture that might be injurious, and at same time retain as much as might be useful. It is evident that, in this way, in wet weather, the trench will prevent any water from lodging, and that in dry seasons, the furrow receives the slightest shower, and conveys the moisture direct to the roots of the plants. The drill also, in this way, admits the use of the hoe and the scuffle, by a person standing in the trench, which cleans the ground with less trouble, and much better than it can be done by hand weeding. You are also enabled to mould up higher, which it is a great object when those kinds are cultivated in which the increase *grows up the stalk*, as, in such cases, the higher you mould, the greater produce you have, and in digging out (as you know where to put the *spade*) there will not be seen so many potatoes cut—but in any case, a *four pronged grape*, is much preferable to the spade for this work. It appears to me, by following this plan, you would both gain in produce and save in manure, and your land would get better tillage, and be left in a cleaner state; and when the farmer has the command of a plough, there is nothing to prevent its being used in the preparation of the ground, marking out the place for the trench by a furrow. In regard to the cultivation of this crop, I should also wish to recommend to you the practice of putting your manure in the ground, as opportunity offers, through the course of the winter, as soon as it is made; and leave for spring only the work of dropping in the seed at the back of the spade which any boy or girl can do; by which means you will have the potato setting over before, I may say, you are now in the habit of beginning to it. By following this practice, there will be a prodigious saving of manure, as you may readily prove, by making the experiment of putting out twenty loads,

the recent failures in the growth of this crop, but I confess myself unable to account for it in any way; the treatment which now fails has been successfully practised, both in planting and preserving, for a century, without any bad consequences arising; and the uncertainty of the growth at present appears quite incapable of being explained.

I have suggested at last Markethill meeting, that better seed might perhaps be obtained, by allowing a portion to remain undug in the ground, and this is likely to be extensively tried this season, but with what success it is not yet possible to say.



or any other particular quantity of manure, and measure the ground it sufficiently covers, then put a similar quantity by itself, in a heap, and let it remain until the May following, and measure how far it will go. I will venture to say, it will not manure half the space, and the land manured at November will be found to give the best and *earliest* crop. Care, however, should be taken during the dry weather in autumn, to clean the ground of weeds ; and it must be seen that the litter has been completely incorporated with the manure, so as to ensure a proper fermentation in the ground. In order that the potatoes shall be of good quality, it is very material that they should be fully ripe before the frost ; to accomplish which, the planting ought to take place in the month of April. When the frost comes on while the crop is in a growing state, the plants are killed before they arrive at maturity, and consequently wet, and without nourishment. It is a great mistake to suppose, because potatoes planted late in May often give a more abundant produce, that the crop is, therefore, the most profitable. Many people say, they will do well enough for feeding pigs and cattle ; but a good dry potato is just as superior to a wet one, as food for your pig, as it is for yourselves ; and if you put wet and dry into a basket together, the animal will soon show you that he knows the difference.

Next to the potato crop, which forms such a large portion of your own food, comes the turnip crop, which affords the most wholesome food for your cattle ; in regard to which, I must say, that great inattention prevails. There are four things in the cultivation of turnips which you ought to be most particularly careful of. First, to have the ground in a finely pulverised state :\* this is much more easily accomplished by ploughing up the land roughly and deep before

\* It sometimes happens that severe frosts in June heave up the ground, and raise the roots of the young plant out of reach of the manure ; the immediate consequence of which is, the sickly appearance of the crop. The drills should in this case be rolled without loss of time, to replace the plant solidly in the ground. When a roller cannot be obtained, a small round block may be substituted for the wheel of a wheel-barrow, and some stones being put in the box, let it be wheeled over the rows ; or if this cannot be got, let two people, standing opposite each other, press down the earth with their feet. I have seen crops recovered by these means, which in a few days would have entirely withered away.



the frost than by any other means. Secondly, to force forward the young plants into rough leaf, in order to secure them against the ravages of the birds, who are apt to pick up the seeds just as they are bursting, and the attacks of the fly, which the crop is liable to, until the rough leaf comes out.\* The best way to accomplish this, is to put out the manure in a heap in the field a few days before putting it into the drills, shaking it out very lightly, and, if very dry, sprinkle a little water over it: this will produce a new fermentation, and when it begins to smoke, then is the time to put it immediately into the drills and cover it up, and sow the seed without delay.† The warmth thus obtained will force the plant into rough leaf in the course of forty-eight hours; whereas, if you put the dung in cold, (it being generally what is old and well rotted that is used,) the fermentation is slow, and the plant will not be out of danger perhaps for a week. Thirdly, to keep the ground clean of weeds: this should be done by cleaning the land *before* the turnips are sown, as much as possible, and watching their growth afterwards, and by the scuffle or horse-hoe cut them off before they can choke up the crop. Fourthly, to keep the ground constantly loose and open about the plants, by stirring the ground between

\*A writer in the Mark Lane Express, of the 17th March, 1837, states that immediately upon the first appearance of the fly, he applied the horse-hoe as close as possible to the plants, the disturbance occasioned by which put the entire swarm to flight, and the same success attended this application elsewhere. John Hogg, of Drumgaw, states to me that he had banished them by rolling the drills very early in the morning, which he conceived had crushed them when in a torpid state from the cold; but it may be a confirmation of the above, the disturbance of the roller affecting them more directly than that which the horse-hoe could be supposed to produce.

A writer in the Irish Agricultural Magazine, asserts most positively, that to take lime in its most caustic state, being just slacked, and then sifted very fine, if scattered over the young turnip plant or any other plant when the leaf is wet, the plant will not be at all injured, but the fly will be entirely destroyed; and, in like manner, it will destroy all kinds of slugs and insects if used in the evening, when the ground is wet with rain or dew, and the same plan will kill insects on peach, and other fruit trees.

† When a bad ploughman makes his drill in the first instance crooked, he sometimes strives to remedy the defect in covering in the manure. This will help the look of the furrow, but it puts the top of the drill off the top of the manure, and the crop misses, without the reason being perceivable.



the drills in dry weather. It is quite extraordinary the universal prejudice that exists against stirring the ground between the drills in dry weather, in summer, which, it is said, lets the heat more easily penetrate into the earth : now, the very reverse of this is the case—the oftener the ground is stirred, the less it will be affected by the heat.\* Land, in a pulverised state, imbibes the dew and damp of the night, the exhalation of which, by the warmth of the following day, produces a moisture round the plants, which nourishes and invigorates them in a most remarkable degree ; whereas, if left unmoved, it often, particularly in clay land, gets baked so hard that no plant can thrive in it. Let the experiment be made in a plot of cabbages, and dig carefully between the rows at one side, and compare them with the others which are left untouched, and you will soon see the difference ; in fact, if you will take the trouble to observe a drill of cabbages when the earth is first turned up after long parching weather, you will perceive, before it has been done two hours, that the leaves have assumed a more lively colour, and will look more vigorous than they did before ; and you may rest assured that, in dry weather, every drill crop is improved by having the soil turned up as often as practicable, provided you do not disturb the roots of the plants.

The flax crop seems next to claim attention. This was once the crop perhaps of the greatest importance to the North of Ireland, but the introduction of spinning mills having almost entirely destroyed hand spinning, which had afforded a market for the home growth, remunerating prices can no longer be obtained ; the spinning mills on the east coast of England, finding it more advantageous to procure their supply from Russia and Holland.

\* It is a fact well known, that drill crops in a sandy soil are much less injured by long continued dry weather than those in clay soil. What is the reason of this ? Is it not that the nature of the soil keeps the ground about the plants loose and open ? Does not this point out that artificial means must be taken to keep clay loose and open also, in order to prevent injury from the drought ; and this can only be done by ploughing or digging the land before the frost comes on, which will pulverise it effectually ; and afterwards, when the crops have been sown, when dry weather comes on, to turn it frequently, in order to prevent its being baked into a flag by the heat of the sun. With this mode of cultivation, clay land, in a dry season, will produce one-half more potatoes ; and without it, scarce any crop of turnips can be expected at all in such soils.



The necessary result has been, that from the period alluded to until the year 1834, this valuable crop has been nearly lost to this country. About this latter period, several spinning mills had been erected in the neighbourhood of Belfast, and to this circumstance was attributed a great increase of demand and advance in price, which, however, afterwards appeared to have arisen from a great failure of the flax crop having taken place on the Continent; this revival of demand caused an immense quantity to be sowed in spring, 1835, for which high prices were obtained; and in spring, 1836, all the wheat land almost in the North of Ireland was turned to the cultivation of this crop; but the continental crops having again become abundant, the price has been ruinously low, and it has been made again evident, that under ordinary circumstances, the *home* grower cannot compete with the *foreign*, who, having the advantage of cheaper land, and cheaper labour, and water carriage to the English market, free of any duty, will always be able to undersell us, until protection is afforded. I therefore cannot recommend at present the cultivation of this article; but if protected to the same extent as grain, it would become again one of the most important crops which this country produces.

The great complaint made against its extensive cultivation is, that it leaves nothing behind in the way of straw for manure; but I am well convinced if the practice was adopted of watering the flax ground with the water in which the crop had been steeped, it would enable the land to give any other crop in succession, or would secure a most abundant crop of clover, (which should always be sowed with it,) and a luxuriant crop of wheat afterwards; this practice being pursued, it might be grown to a very considerable extent without injury to the soil, should any change of circumstances again enhance the price. In regard to its cultivation, the general belief in this neighbourhood has been, for many years past, that in order to cultivate it successfully, it must be sown on old lea which has been broken up by potatoes, set in the lazy bed way, and that the *firmness* of the *bottom* is what insures the good crop. It is likewise conceived that the use of lime is exceedingly prejudicial. Now I am strongly inclined to think that both these opinions are erroneous, and that it is not the *firmness* of the *bottom* but the *freshness* of the *ground* which is beneficial: and as these two things in



breaking up old lea usually go together, the cause of the good crop has been mistaken. In Flanders, where the finest flax in the world grows, it is proved by Mr. Radcliffe's account of the Flemish agriculture there, that the land intended for the flax crop is ploughed and harrowed over and over again, and heavily rolled both before and after the sowing, until the land is brought perfectly level,\* and as fine as powder. This shows that all which is said about having a solid bottom for the root to take hold of, is quite ideal. Then, in regard to the prejudice against lime, I consider that it is completely disproved by several instances which have come to my own knowledge very lately; for example, David Greer, of Colrust, had flax of extraordinary length and fineness, and he sowed it upon potato land that had been previously under cultivation, and had been manured in the usual manner with dung; upon this he spread the lime warm from the kiln and harrowed it in, and then sowed the seed and harrowed it again. The crop was the finest that could be imagined, and he has since pursued the same plan with every success; and what shows that the goodness of the crop was owing chiefly to the lime was this, that the places where the loads of lime were emptied, could be traced by the superior luxuriance of the growth; but the land had never been limed before, nor had it borne flax for many years. The Flemish rotation only admits flax once in seven years, and this is often enough for lime also. John M'Clure, of Drumahoe, set his potatoes on lime and soil, and some dung, and sowed flax afterwards, and had an excellent crop likewise. These instances show that the existing opinions to which I have alluded are without foundation; and I would strongly recommend that you should not be deterred from the use of lime as a manure for growing flax by any such reports, only attending to this, that once in seven years is fully often enough either for one or the other: and it appears to me that the *real* advantage attending the crop upon old lea is, that it insures the lapse of a certain number of years between the two flax crops, and a fresh soil for the lime to act on. I should consider that to

\* The advantage of having the ground quite level is, that it ripens equally, and grows to the same length, which are both material points to be attended to in a flax crop, and cannot be obtained where the ridges are much rounded. The ground, of course, must be sufficiently drained.



manure the stubble of a grain crop in the end of August, taken after clover, and sow upon it winter vetches, and as you cut the winter vetches the following May, to sow spring vetches ridge by ridge as the ground is cleared, would be as good a preparation for flax, the following season harrowing in lime with the seed, as any other that could be named: but as I have not tried it, I only propose it for your consideration by way of experiment; but of the result, I have not myself the least doubt. In Flanders they use liquid manure, consisting of urine, preserved in vaults under the cow-houses, with a quantity of rape cake dissolved in it; this immediately incorporates with the soil, and the flax crop receives the full benefit of it. Now, in the way I have suggested, the ground is manured for the *winter* vetch, and being followed by the spring vetch, this insures the incorporation of the manure fully with the soil, without being in the least exhausted, for vetches leave the ground better than they find it, and refresh the soil more than three or four years lying out in poor pasture; so that it appears to me, the ground would be in the very highest order, if ploughed or trenched up in the winter, and again well ploughed, harrowed and rolled, before putting in the crop, as already stated to be the Flemish practice.

The next thing I wish to remark upon, is your mode of proceeding in the cultivation of wheat. The customary mode is either to put in the crop directly after potatoes, or first to take a crop of flax, and after it sow the wheat, adding some lime harrowed in with the seed; or a third way is, to fallow the ground intended for it, which, however, is but rarely practised; but in any case, you almost invariably trench up the land in ridges, with such sharp edges, that you cannot, without very particular care, *apply the harrow in spring*. This practice, though heretofore almost unknown to you, is of infinite service to any winter crop, by breaking the crust formed on the ground by the heavy rains, and opens the surface to the influence of the atmosphere, at the same time earthing up the plants, which being rolled\* in the course of a few days, will afterwards grow with double vigour. This mode of trenching with sharp edges is by no means necessary. Even in the wettest lands, the ridge may be left in such a shape as will protect the edges from being too severely

\* Take care not to roll until the crop rises after the harrowing:



acted on by the harrow, and the advantage to be gained by this operation is not confined merely to the wheat crop, but you are enabled thereby to sow, at the same time, clover and grass seed. This form of the ridge is superior in another point of view also; for where severe frost succeeds to heavy rain, which often occurs, the frost penetrates at the edge of the ridge both by the surface and the side of the trench, and blows up the ground, raising the young plants with it, which taking place repeatedly in the course of the winter and spring, materially injures the plants, and accordingly you will generally find those next to the edge most sickly and delicate; and the injury does not altogether end there, for if an early drought takes place, it enters the ground in like manner, both by the side and the surface, and reduces the soil to such an arid dry state, that the plants are again injured for want of moisture. These are strong objections to the mode of trenching up the ground, which generally prevails at present among you. But my grand objection is, that it deters you from using the harrow so as to put in clover and grass-seed; and by not doing this you are at present driven to the necessity, most commonly, of putting in a crop of oats after the wheat, and so take two grain crops in succession, which is contrary to the fourth rule laid down. Your land thus becomes exhausted, and as you have not (according to the present mode of feeding your cattle) manure to potato the whole of it again, there is no alternative left you but to let it out to rest (as you term it); in which state it remains worth little or nothing, perhaps for several years, before you can get manure to spare to bring it again into cultivation; whereas, if it had been sowed with clover and grass seed, the practice of house feeding, which this would enable you to have adopted, would always supply you. as I have elsewhere observed, with plenty of manure, and you would have had the second grain crop, after the clover, much superior to what it would have been after the wheat.

Those who, from not paying attention to these considerations, have not put in clover with their wheat, should, nevertheless, upon no account, put in oats: let them sow a crop of vetches or field beans, which will leave the ground in a fine state for either oats or barley, and then it ought to return to potatoes or turnips, and undergo a new course of



cropping.\* Under this second mode of cultivating wheat, you manure both for it and for your potato crop, and these two manurings give you first potatoes, then flax, then wheat, then vetches or beans, and lastly, grain—that is, you get *five* crops from *two* manurings; but in the rotation I have suggested, the *one* manuring gives you potatoes, grain, clover, and grain again—that is, *four* crops from *one* manure, which is evidently a better return than the other. I recommend it also more particularly on this account, as it keeps one-fourth of the land always in clover and vetches, by which means, due provision is made for the accumulation of house-manure; for it cannot be too often urged upon your attention, that lime must not be applied, year after year, to the same land. Many of you think, from witnessing its first effects, that you can always have recourse to it with the same success; but in this you will most assuredly be disappointed; and if persisted in will bring your ground into such a state that it will produce nothing—once in six or seven years is sufficient to apply it with advantage, but it never will produce the same effect as at first.

It is, therefore, of the utmost importance, that when you first begin to *lime*,† you should raise your potatoes upon it; and make use of the house-manure, which this leaves at your disposal, to raise turnips or mangel wurzel for house-feeding; and increase your stock of cattle to the utmost, which this plan will enable you to keep; setting it down for certain, that you ought to have, at least, one cow for every three acres‡ of arable land, as being the *smallest* stock which will enable you to keep your land in heart, when the resource of lime can no longer be looked to. If this is not kept in view, from the very outset, you will find you cannot manure the one-

\* A French chemist has lately found, by experiment, that there is a kind of excrementitious discharge from the roots of the bean that is congenial to the nourishment of grain, which is fully borne out in practice.

† It is said, that if hot lime is slacked with pickle, the salt combining with the lime forms a more beneficial manure than it would be if applied in the common way.

‡ I calculate that the milk and butter of a cow will pay the rent of three acres of land of average quality; and if she can be supported upon half an acre, there will be then two and a half acres out of every three, rent free for you to make the most of, with plenty of manure to culti-



fourth of your farm every year ; and you will, therefore, be thrown out of the rotation—the land will be exhausted and left out to rest, as formerly ; and as it gets poor you will get poor yourselves ; and having no longer the relief of lime to fall back upon, your case will become worse than what it is at present ; for *now*, by lending you lime, I have no doubt of making you comfortable and independent, if you are only industrious and willing to follow the instructions given you ; but *then*, this resource is lost to you, and I do not see what other can be made available for your restoration.

From this digression I return to the *third* mode in use of cultivating the wheat crop, which is sowing it after a fallow—the nature and object of which operation you seem to me, in general, but imperfectly to understand. It would appear, from the practice of many, that they considered the great object of so many ploughings was merely to pulverize the ground ; and if you accomplished that, by giving three or four ploughings in quick succession, nothing more was to be desired ; without taking into account that the principle of this operation is built upon this circumstance—that in the course of a certain number of years' cultivation, almost all lands will accumulate a certain stock of the seeds of a variety of weeds, which being shed upon the surface, have, from time to time, been turned down by the plough, out of the reach of vegetation, where they will be preserved for almost any length of time, until they are again brought within the influence of the atmosphere, which will immediately cause them to grow. The great object, therefore, of the fallow is, by repeated ploughings, to bring, in succession, every particle of the soil into contact with the air ; and by allowing each crop of weeds to vegetate, and then ploughing them down and bringing up another portion to be served in the same way, completely to free the land from the seeds so accumulated, which can in no other way be effectually done, as they must be allowed to grow before they can be destroyed. It is manifest, therefore,

vate them, besides any profit that may be derived from pigs, poultry, &c. ; and it is from fully considering this, that I have repeatedly asserted that every tenant on these estates might, if they followed the instructions given them, have their potatoes, their grain, and their pork for themselves, in place of selling the two latter to pay their rent, as they have heretofore in many cases been obliged to do. See sundry declarations in Appendix upon this subject.



that time must be given between the ploughings to let the weeds spring up, and if this time is not allowed, the seeds are again turned down until a succeeding ploughing may restore them to light and life ; this, therefore, should never be lost sight of. The plan, however, of raising wheat after fallow is not very suitable to a small farmer who can seldom bear to lose a year of his land ; but it may be adopted in the outset with advantage, for the purpose of cleaning his ground, and enabling him to get into a better system ; and it must be admitted that the crop of wheat, after fallow, is very superior, both in quantity and quality, to any other, and will sell perhaps a shilling per cwt. higher than the produce of the same seed sowed on potato land. Before turning to any other subject, I wish to make one further observation upon the wheat crop, which is, that you, I may say almost universally, let it stand until it is over-ripe,\* which thickens the skin and spoils both the appearance and quality of the grain. The rule laid down in Scotland to know when wheat is fit to be cut down, is to take a few grains and squeeze them between your finger and thumb, and if there is no milky fluid proceeding from them, the crop ought to be cut, no matter what the appearance of the straw may be.†

Another observation I have made, in going through your farms, is the very little care taken to prevent the spreading of the destructive weed called *coltsfoot*—this is the first plant that comes into flower in spring ; you will see the blossom, in the land where it grows, in the month of March, before a leaf is visible, and, in the course of a month or six weeks, whilst the ground is still red, it appears with a white tuft of down, on examining which, you will find a seed attached to each particle, by which it is carried for miles over the country at that

\* This observation extends also to oats, particularly the potato oat, which will fully ripen in the stook, and the danger of loss by a shake will be avoided.

† It may not be amiss here to remark, that where any smut may appear in the wheat crop, the grain should be separated from the straw by lashing it, as it is termed, which is striking the heads against a sharp board or rail—by this means the dust flies off without being mixed up with the grain, which the operation of threshing is sure to do—the difference in the appearance of the produce, under the two modes of management, will not be less than one to two shillings per cwt. according to the degree in which the crop has been affected.



season, when the ground is ready prepared for its reception. It is by the sowing of the seed in this way that this weed is propagated, for it makes but slow progress by the root, however difficult it may be to eradicate it when it has once got hold of the ground. This weed also appears to me to grow spontaneously, where the practice of over-liming, or burning the surface to make ashes, prevails. The most effectual way of banishing it, is to pull up after harvest, wherever you see the leaf on the ground, as much of the root as can be got out; you will find at the end from whence the leaf grows, two or three young buds, from which the flower proceeds in spring, and by pulling them the flower and seed are prevented; attention to this, and pulling also any blossoms arising in spring, will soon clear the land of this most hurtful weed.

There is another weed which I likewise see doing a great deal of mischief—I mean *ragweed*. The quantity of nourishment it draws from the ground is shown by this, that it will not grow upon bad land. In regard to it, a most ridiculous notion prevails, which I have frequently found people possessed of, who ought to know better—namely, that all the nourishment it has extracted from the soil in its growth, is again returned to it in its decay; or in other words, that after ripening the seed, the sap descends and enriches the earth, which is, therefore, left nothing worse.\* I see, also, the cutting down thistles wholly unattended to, and the seed allowed to scatter with the most perfect indifference. In England, a farmer has been known to bring an action against his neighbour for not cutting down the thistles on his farm, and he recovered damages without difficulty. I wish most sincerely, that here, where people seem to be as litigious as

\* The absurdity of this idea reminds me of having been once very urgent with a man to drain part of his farm, which I saw was actually good for nothing, from the neglect of it; and what do you think was the reason assigned for not wishing to do so? It was this—that “if he made drains in his land, all the fat would run away.” You may perhaps laugh at this man’s absurdity; but the idea that the nourishment extracted by the growth of a plant and the ripening of the seed, can ever descend through the dry stalk, and be discharged again by the roots for the enriching of the soil, is an absurdity fully as great, if not greater, than the notion of the poor man alluded to, who, although you may pity his ignorance, had just as high an opinion of his own judgment in regard to the effect of the drain, as you can possibly have in regard to the ragweed.



in any part of the world, some one would set an example of punishing such wanton neglect as takes place with regard to all the weeds I have alluded to. Thistles are only biennial plants, and, therefore, if cut down two successive years the supply of seed would be destroyed. I see people employed for whole days pulling up these out of their crops, when half an hour's labour in cutting down the parent stocks, would have prevented the young growth from ever having come into existence. Besides the weeds just mentioned, there are others scarcely less injurious; such as the yellow flowering weed, known in this country by the name of prussia, but is I think more properly called corn charloch. Also the corn marygold and wild poppy. All these are seldom seen except in land exhausted by successive corn crops. When the land is in this state it seems to produce them naturally, for they are never seen where a proper rotation of crops is pursued. I believe they are all annuals; and if you will pay attention, you will find they are rarely seen to grow to any great extent in the first crop, after the manure, nor after vetches or clover; both which crops leave the ground *in good heart*. When this is the case, the vigorous growth of the crop chokes these weeds, and they are soon banished; but when the ground is poor the weeds choke the crop, and get almost entire possession of the land.

There is another matter in which I have also observed great ignorance and inattention shown—that is, in your allowing the chaff of your corn crops to be lost. You will say, perhaps, there can be no nourishment in chaff, and why should we trouble ourselves in that case about it? and it is very true there can be very little actual nourishment in chaff; but there is a great deal of use in it, notwithstanding, which you may soon perceive, if you will consider that when your cow is confined to dry hay or straw in winter, after the juicy rich grass of summer, the change of food immediately affects her habit of body—the dung gets dry—the coat stares, and from the costive state of the bowels, without any suspicion on your part, diseases originate which often end in the death of the animal, and may perhaps tend thereby to your own entire ruin. Now, the chaff which you throw away is the very best remedy against this evil; and when well boiled, with some potatoes mashed down, and some seeds or bran mixed, to make it palatable, a bushel full given in this way, night and



morning, will open the bowels, make the skin look healthy, and increase the quantity of milk beyond your utmost sanguine expectations. When chaff cannot be had, chopped hay or straw may be substituted; a machine for cutting which may be bought for about thirty shillings. The mixture should be made of such a consistence as to be easily stirred about with the hand—a greater quantity of potatoes may be given, with advantage, in this way, than in any other; but they must be boiled separately, as potato water is always injurious: the mixture is improved by some Swedish turnips, which may be boiled with the chaff;\* but where turnips are given in quantity, they will, of themselves, open the bowels sufficiently.†

In alluding to the loss you expose yourselves to by negligence and inattention in the foregoing respects, I cannot allow myself to pass over what you lose by the manifest neglect of the instructions given in the fifth rule, as to the management of your manure. When I published the first edition of this Address, I certainly did expect that a matter of such importance would have met with *universal* attention; and yet, I am sorry to observe, that at the present day *I see many* instances of a total disregard to what is so plainly your advantage to attend to. It would seem to me some of

\* See Mr. Scott's account in Appendix.

† Another useful article which I see going to waste is the seed of your flax. If you were to stook up your flax like any other crop, and delay watering it until spring, you might save the seed without the slightest difficulty. It is said, however, that the flax will not be so fine and silky in this way; the seed however generally pays from £8 to £10 an acre, which is equal to most other crops, and the flax remains over and above; but with a little trouble it may be saved, without that delay, by following the plan pointed out to you some years ago by the Linen Board. But if you do not choose to take that trouble, let the seed be at any rate taken off by rippling, and made use of, as is practised in Scotland, for the rearing of calves. The seed, when boiled, forms a rich and nourishing drink, upon which, mixed with a little skim-milk, calves will thrive as well as upon any food whatever, except running them on the cow; and it is actually prejudicial to the colour of the flax, if you do not take it off before steeping. If the wetness of the weather should prevent your drying the bolls with facility, a slight drying upon a kiln will at once do the business, and insure their keeping safe until required for use. It is now generally thought best to let the crop ripen more than formerly, and there is then less loss in the manufacturing it.



you have so little understanding, that you suppose if you have a certain *bulk* of manure, you have all you can desire, and that the quality or strength of it is of no importance whatever—never considering that the strength and richness of your manure is soluble in water ; and if you allow it be drenched time after time by floods of rain running through it, there will only be dross and refuse left behind. If you keep the manure from being thus injured, and throw back the seepage, and prevent the evaporation, as directed in the fifth rule, you will preserve it in all its original strength, as it comes from the cow-house ; but as an example may perhaps bring this before you in a stronger point of view than in any other way I can put it, let me suppose that some of you should purchase a little tea at a grocer's—as long as you keep it dry and shut up from the weather, it will preserve its original strength, even for years ; but when you put it into a tea-pot and pour water on it three or four times, the strength is all gone, and your tea becomes, I may say, dead useless matter. It is just so with your manure. I see it often placed in such situations, that the rain water from your house and offices, and the seepage from the higher grounds, all runs through it ; thus every shower floods it, day after day, carrying off always some part of the strength, until at length it is left as dead and as useless as the leaves thrown out of the tea-pot. Surely no man in his senses will persist any longer in such gross mismanagement. If you were to observe a man quietly stand by and see *his potatoes destroyed*, which were to be the chief support of himself and his family, you would say he was either mad or a downright idiot ; and if this would be your opinion of *him*, what can you think of *yourselves* when you stand by and daily look on at the destruction of that manure by which *your potatoes are to be produced* ?



## CHAPTER V.

Erroneous Opinions as to land employed in raising food for Cattle—  
Different Opinions as to value of Turnips compared with Potatoes—  
Reasons for preferring former for the use of Small Farmers—  
Land to be applied to what will produce the most Money—Great  
Return from buying Poor Springers—Objections to Continual Til-  
lage Answered—Increased Employment and Good Wages, and Ac-  
cumulation of Property thereby—No one to be Discouraged from  
Commencing, however poor.

WERE I to allude to every subject which might appear wor-  
thy of observation, the length of this address would greatly  
exceed that to which I propose to confine myself, but I can-  
not help further remarking, that farmers in this country are  
apt to judge erroneously in regard to the value of such crops  
as turnips and mangel wurzel, and other food for cattle,  
upon this principle, that they are not saleable in the market,  
and they give an undue preference to potatoes, on account of  
the money which they can almost in every season command  
for them. I am far from wishing to detract from the value  
of potatoes, and the great advantage which arises from their  
being adapted to the food of both man and beast ; but this  
very circumstance generally occasions their being *sold*, and  
thus the farm is robbed of the manure, and the future produce  
curtailed, for the temporary object of raising, perhaps, a tri-  
fling sum of money, though the farmer might, in the end,  
have even made more by *fattening* stock with them, (in which  
respect many prefer them to any other crop,) and have had,  
in this way, the manure besides. But if a farmer has plenty  
of *turnips* and *mangel wurzel*, he is not tempted to misap-  
ply them ; and they are, therefore, turned to the purpose for  
which they were intended ; and if he has more than is  
required for that purpose—he buys cattle lean, and sells them  
fat,—or he purchases them in good condition, at November,



when beef is cheap, and holds them over for a market in spring, when it is dear—or he buys springers in March or April, at a low price, when fodder is scarce, and sells them at May, when they are near their calving, and grass is plenty. In all cases he is sure of a good profit, in money, besides what he makes by manure, which is always most valuable; and both these crops have the advantage of being used raw; whereas, potatoes ought, when given to cattle, to be half boiled, which consumes a great deal of fuel, if used on any great scale. It is a disputed point whether turnips or potatoes are the most beneficial crop,\* and great difference of opinion exists among persons holding large clay-land farms, where carting off the turnips poaches the ground; and also among those who make a trade of fattening cattle upon a large scale, who have, in several instances, preferred the latter. But, whatever idea the large farmer or the cattle feeder may entertain, it appears to me, there can be but one opinion upon the superiority of the turnip crop, as regards the *small* farmer.†

\* There is a very general complaint against turnips, that they give a bad taste to the butter—but this is not necessarily the case.

The fact is, turnip-milk will not keep as long as grass-milk, but gets rancid; and this is increased by the practice of keeping the churn near the fire in winter, which is sometimes done. The milk, on the contrary, should be kept cool, and warmed when churning by as much boiling water as it will bear. When yellow turnips are used, the butter will be, nevertheless, a good colour; but if wanted with more of a yellow shade, dairy-maids use grated carrot in a cloth, wet with boiling water, and squeeze it into the churn. As the milk does not keep, it is of great importance to churn often, at least twice, and if possible, three times a week, so that it cannot be let stand for cream, but churned whole. Where so frequent churning is impossible, it is but to add one-eighth part of boiling water to the milk as it comes from the cow, and cover it over with a double cloth, which prevents the heat escaping, and imbibes the steam, which seems to carry off with it the peculiar flavour which the turnip would otherwise communicate—but under any management much will always depend on the cleanliness and attention of the dairy-maid.

† Richard Lloyd, Esq. states as follows, in a Treatise on Agriculture lately published by him:—The early Dutch garden turnips is by no means an unprofitable root; my breadth of land in vetches last year being very limited, I reserved them all for my horses. In consequence I sowed half an acre of the early Dutch in March; I commenced taking them up in July, and, first steaming them, served them without any other food to eighteen newly weaned pigs, and also to three breeding sows and a boar: they lasted



In the first place, the saving of fuel, to which I have already alluded, is a most material recommendation. Likewise the late period of the year at which they can be sowed, which admits of their succeeding rape, winter vetches, rye-grass, annual clover, or early cabbage. The Malta turnip may be sown at any time in July with the prospect of a full crop. Thus, it is clear that three crops may be obtained in two years, turnips being one; besides this, it is to be considered that the principal use of the turnip crop to the small farmer, is the support of his regular stock, and the supply of milk and manure. Now a stone of turnips will yield as much milk and manure as a stone of potatoes, and the same land will yield five or six stone of the former, at least, for one of the latter. Again, when they are applied to fattening, and compared with potatoes sold in the market, (which is the usual mode of disposing of them by small farmers,) it must not be forgotten, that the expense and loss of time in driving a fat cow to a fair, is nothing compared to the labour of attending the market with a horse and cart, day after day, to sell a quantity of potatoes, when both the farmer and his horse might be most advantageously employed at home in the business of the farm; and that, in the former case, he gets his money *in a lump*, whereas the potato-seller receives

until the end of October, when my other turnips were ready to supply their place. On the 23d of the following November I sold the eighteen pigs as stores for £23, which had consumed very little more than the produce of half an acre, and left behind them several cart-loads of very rich manure. Their condition as stores was remarkably good, and they were never out of confinement until they went to the fair: the price on pigs at that time was high, but had it been considerably lower they would have paid well. I have mentioned this circumstance as a substitute for vetches; and it is well worth any man's consideration and adoption. I should recommend vetches in preference, there being much less trouble attending them; but to have a certain quantity of both would be most advisable. This year my pigs will have no other food than vetches as long as they last. It may be observed here, that if a farmer is very desirous of trying two crops in one year, he could not adopt a better or surer plan, than by sowing the early Dutch turnip in March, and, early in July, putting in spring vetches after them; the vetches would be consumed in October, and wheat might succeed them; but the land must be of good quality, and the turnips well manured for.



payment in small sums, which, perhaps, may be frittered away before it accumulates to any amount.\*

It should also not be overlooked, that even if only half the potatoes were planted which the family might require, in order to make room for such crops as would produce food for one or more cows, the value of the milk which would be thus obtained would buy more than twice the quantity of potatoes which the ground taken would have produced : and where there was little land, it might be very profitable farming to plant only early potatoes where there was a *good market at hand*, to sell the whole off in the end of July, and sow the land with rape and Malta turnips, for winter and spring feeding. The value of an early crop of potatoes is very often superior to a late one, and the owner would have the money to lay in his supply in November, and would have, besides, all the winter and spring feeding, and the milk, and manure which the after crop would yield. A judicious farmer should not consider himself bound to raise the pota-

\* The force of these arguments appear to me still stronger now than when originally written, for the experience of 1835 has shown that the wheat produced has so far exceeded the demand, that the price fell so low as to make it a losing crop to the farmer ; although formerly it was that upon which he most relied to make up his rent. This was so generally the case, that the land was turned to the growth of oats and barley to such an extent that, with the aid of but an indifferent harvest, the quantity of wheat has been so reduced as to restore the price to a remunerating rate ; but I have no doubt that from the improvement of agriculture, more grain of all kinds will be raised in average seasons than there will be found consumption for at profitable prices. If this be a true view of the case, it is quite evident that you should turn your chief attention to cattle crops. It appears clear, in ordinary cases, we can do without any importation of foreign grain ; but we have never yet been able to do without an importation of foreign butter ; which, on the contrary, has been annually increasing. This shows what is most wanted ; and what is most wanted, will always pay him best who has it to sell ; and, accordingly, you will find on calculation that an acre of clover and rye-grass, if applied to house feeding, will yield you, upon an average, a larger return in the value of the milk and butter it will give, than any average produce from grain, the gain upon which latter I fear will yearly become less until the quantity at market shall be reduced by turning a large portion of the soil to flax, hemp, butter, fallow, &c. which might easily be done by the legislature giving those crops the same protection as grain now enjoys.



toes he will consume himself on his own farm. His object ought to be to manage his land in such a way as to produce him *most money*, which will always supply him with what he may want.

Acting upon *this* principle, it appears to me, the man, who cultivates green crops largely, and is able to buy extra stock when wanted to consume them, will make more of his farm than in any other way. For example, suppose an acre of rape put in after winter bere or spring vetches, the land to be well manured, and the plants dibbled in by the second week in August, it will be ready to cut to great advantage when the clover fails about the middle of October, and would enable the owner to pay himself well by vealing calves, after which it will be ready to cut again in April following, and will feed ten to fifteen head of cattle for a month or five weeks;\* and supposing that springers have been laid in in a low condition to calve about the first week in May, they will by that time be so much improved, and being also just ready to calve, they will sell at an advance of 25s. to 30s. each. But to take every thing at the lowest, say eight cows sold at 25s. profit, amounts to £10, leaving the ground and the manure ready for turnips, an acre of which will fatten four head of ordinary sized cattle, which should yield a profit of £3 to £4 per head, but calculated at 50s. will produce £10 more; that is, £20 gained by the acre, without calculating any thing on the October cutting, which is worth £5 an acre more, leaving the land in good heart for sowing barley and clover; or he might put in spring vetches, and after feeding them off in the same way, prepare the ground for wheat. Now, after making the largest allowance for seed and labour, and some hay for the cattle when fattening, the manure being supposed to pay for the straw, it is evident there will be more clear profit remaining than any single crop would produce; and, of course, if a man has money to deal in this way, it will be his interest to do so, and with the money so gained buy the potatoes or other produce he may require. I have selected, as an instance, a crop of rape to begin with, as it comes in earliest, and cattle generally give a larger profit laid in about the end of March or beginning of April, than at

\* The cutting in October prevents the crop in April being so heavy as it otherwise would be, or it would do more than this, if let come into blossom without previous cutting.



any other season. Mr. William Dougan, of Lisdrumcher, has followed this plan this last season, and has realized a much larger profit; but, at all seasons, springers bought in poor, and well fed for a month or five weeks, and sold when ready to calve, are sure to leave a handsome profit, perhaps more than vealing calves, as recommended in October. But the benefit of having a large supply of rape, Swedish turnips,\* or mangel wurzel for spring, is also of great advantage where there are large grazing farms, as it enables the stock to be kept in the straw yard until the grass rises, which, by the shelter it affords, draws up a succession of young shoots, and produces a growth of grass that cannot be eaten down by the stock, which would have been half starved on the same ground, if they had been more early turned out upon it. Some of you, however, may perhaps say, as I have often heard it urged, that your land would not bear this constant turning and ploughing for so many crops in succession. But there seems to be a great mistake in this opinion. If repeated ploughing was to do the land so much injury, how does it happen that it produces such crops after a fallow, when it has been ploughed perhaps five times, with scarcely any intermission. The truth is, that it is not the constant *ploughing*, but it is the constant grain crops you put in when you do *plough*, that does the harm;† and you need have no fear whatever about hurting

\* It is a singular distinction between the Swedish turnip and all others, that it seems to suffer very little in the quality of the root by being allowed to stay in the ground and shoot up to seed, which gives a cutting like rape, and yet the root will afterwards remain sound and sappy, and fit for cattle feeding until the end of June. When this plan is pursued the ground should be afterwards sown with late spring vetches, to cut in October or November.

† It seems to me that the increased fertility of fallowed land is mainly attributable to that very turning which is sometimes complained of as an evil. By this, every part of the soil is exposed to the action of the atmosphere, the effects of which in promoting fertility may be estimated by observing the barrenness which follows from excluding its influence. Examine the *ground under the back* of one of the newly levelled ditches, or what is called the seat of the ditch: now, when the ditch was originally made, this was the surface productive soil, and the stuff thrown out of the gripe to form the back was perfectly barren till. But now you will find the case exactly reversed: what was then the fruitful surface soil is now rendered barren by being excluded, by the back of the ditch heaped over it, from *the action of the atmosphere*, and the back, which was then barren, is now rendered fruitful *by being exposed to it*.



your land in that respect,\* if you only pursue the proper rotation of crops, taking care to introduce vetches and clover between the grain crops, which refreshes the land more *in one year* than lying out to rest in a poor state would do in three or four, as I have already said.

But others will be ready to complain of the great labour it will require to put in one crop after another in this way ; and no doubt more labour will be required in this mode of cultivation, than if you kept half your farm constantly lying at rest. But is not the want of employment your constant complaint ? and if the crop pays you, are you not better off working for yourselves on your own farms, than working for Lord Gosford or Colonel Close, into whose employment it seems to be such an object to gain admittance ? That the extra crops you will in that case find yourself possessed of, will amply repay you for the extra labour you bestow on them, you need not doubt. Look to the case of James M'Donnell of Ballindaragh, who was one of the daily labourers at Gosford, whose farm was in such a neglected state that I directed his Lordship's steward to discharge him, and send him home to work for himself. It is now two years since, and at that time he was in the greatest poverty, without a four-footed animal in his possession. He thought he was turned to beggary when he was dismissed ; but go to his place now, and you will find him with a couple of cows, and one or two pigs, and every thing in a thriving state about him. It appears, therefore, his own farm paid him better for his labour than he was paid for it at Gosford ; and every one who has land to work upon will find in like manner that he can earn more at home by raising extra crops thereon, than all he can make by his working elsewhere. This last objection, therefore, should rather be considered an argument in favour of the plan proposed, than be given as an argument against it.

I have thought it necessary to go into these particulars, because there are always people to be found ready to start objections to every thing which differs in any respect from what they have been accustomed to ; but to any one who takes the trouble seriously to consider the matter, the gain that may

\* So little cause is there to apprehend any impoverishment of the land, that I find on several farms this last year they have lost their clover by the luxuriance of their oat crop, and they will have to change to barley.



be made in the way I have just pointed out will be very evident; and the only real objection I can see to its being more commonly acted on is this, that it requires more *capital* to lay in the extra stock required, than I fear you are at present possessed of; *the want of which* will therefore oblige you to leave the profit to be made by dealing in cattle, in the manner I have been speaking of, *to others*, and to limit your own operations to the purchase and maintenance of the permanent stock suited to your holdings; which, as I have elsewhere said, should *never be less* than one cow to every three acres of arable land; and when you have once attained to such a degree of prosperity as to be possessed of that stock, be assured there is nothing wanting but industry and sobriety to insure your future comfort and independence, and also such a gradual accumulation of property\* as will enable you to provide for your children without applying to the miserable resource of dividing your farm (already perhaps too small) among them, thereby making paupers of your entire family. And let no one be discouraged from commencing to raise green crops, if he has the means of doing so, by the consideration that he has not a cow to get the benefit of them. Supposing he is so poor as not to be able to buy a cow, still there are few people who have their health, and are inclined to be industrious, who cannot raise the price of one, two, or three young pigs, in which these crops will in a little time produce such an improvement, that, in the common course of things, before many months he will be enabled to purchase the cow he was in want of; and would, most likely, not have been able to get in any other way. Vetches, clover, and cabbage, are excellent feeding for growing pigs, and would soon augment their value to the amount required; and if this plan of getting a cow should fail, he will seldom be disappointed (whilst the system of farming now in practice continues) in getting the use of a cow for her keep, from those who have not sufficient food for their stock; by which arrangement he will have milk for his family and manure for his farm.

\* I do not know any considerable estate in the North of Ireland, in which the tenant will not be able to pay his rent by milk and butter, provided he house-feeds this amount of stock, thereby leaving his pigs, his poultry, and all his grain entirely to himself, which shows the practicability of the accumulation here spoken of, in all ordinary cases.



## CHAPTER VI.

Case of Small Farmers in Reduced Circumstances—Mode of Recovery pointed out—Crops according to Old Method compared with those Recommended—Others to be substituted according to circumstances—Improvement in the power of all—Objections Answered.

BUT it is seldom that any one deserving the appellation of even a small farmer, is so very low in the world as not to have a cow of some sort ; and the more common case is, that he is possessed of one at least of those useful animals. Let us suppose him, then, to have four acres of land and one cow, and that two acres are in grazing, or put out to rest, as it is termed ; and of the remainder, half an acre is intended for potatoes, half an acre for first crop of oats on last year's potato ground, half an acre of second crop oats, and the remaining half acre third crop oats ; which, altogether, make up the four acres ; and, with a small garden, may not be considered to be an unfair representation of the general circumstances of the poorer class of small farmers. Now, if an industrious man, reduced to such a situation by bad health, or any other calamity, without capital, and without friends, was to ask me how he, as a small farmer, might contrive to extricate himself from his difficulties and retrieve his affairs—(and this is a question which, above all others, most vitally concerns the poor of Ireland)—I should answer by saying, if a small farmer means to live by his land, his first object ought to be to make every inch of that land as productive as its nature will admit of—and this can only be accomplished (as I have stated in the commencement) by having plenty of manure, and pursuing such a rotation of crops as shall prevent the ground from being ever exhausted. Various methods may be taken by him to arrive at this, according to his particular resources and the circumstances of his farm ; but,



under any state of things, he must keep in mind the fixed maxims of farming already enumerated. By reference to these, he will, in the first place, see that wherever he intends to put on his manure, the land should previously be effectually drained; and, likewise, that the weeds should, as far as possible, be eradicated before putting in his crop. If these directions are not attended to, a cold wet subsoil will destroy more than half the strength of the manure, and half the remainder will perhaps go to nourish the weeds, in place of the crop he intended it for. The next thing he will see pointed out, is to provide for the increase of his manure, by preparing the means of feeding his cow in the house, and to refresh his land by a change of crop. It is from want of attention to these points, the returns from his farm have been heretofore so much reduced, that he has been kept struggling in poverty, when, with *less* labour and *more* skill, he might have been living comfortably. But as an example will make every thing more intelligible, I should be inclined to recommend him, as one mode of carrying the rules laid down into practice, (draining and clearing his land being always attended to in the first instance,) to sow clover and grass-seed with his first grain crop, as a provision for house-feeding his cow the *following year*; and he must begin early and put in kail or cabbage into his potato ridges, and sow a succession of vetches on the stubble of his last year's potato-land oats, to serve as feeding for the present. If there should be any overplus after feeding his cow, and that he should not be able to buy pigs to consume it, he may let such part stand for seed, the produce of which will generally be more valuable than any second crop of oats, and the straw from it will be found much superior to oat straw, as fodder, and contribute to the support of his cow in winter. He will further observe, by the fourth rule, that the manure for his green crops, such as potatoes, turnips, &c., should be put out upon that part which has been exhausted by grain, therefore let it be given to the stubble of last year's second and third crop of oats; and by attending to the fifth and sixth, and seventh rules, let him take care not to have any of his land or manure wasted; and, by burning the backs of old ditches desired to be levelled, he will obtain such a quantity of ashes as will enable him, with his other manure, to sow half an acre of turnips and an entire acre of potatoes, in place of the half acre, as



formerly supposed. By this means, he will be able to bring in half an acre of the poorest part of the grazing, the remaining one and a half acres of which may be used for the support of his cow, until the vetches become fit for cutting, when, if he has any ashes remaining, or as far as the summer manure will cover, the grazing may be broken up and prepared for rape. Supposing these matters to have been conducted upon this plan, when the turnips become ready for use, it will be practicable for him to fatten his cow, and sell her for a price that will enable him to make up the price of two lean ones; or at least to add a heifer to his stock. One rood of turnips is calculated to fatten a cow of moderate size, that has been well fed in summer, which his would have been on the vetches; therefore he would have remaining still one rood of turnips, the curled kail, and what rape he might have got sown, to enable him to support the two cows, thus supposed to be bought, for the remainder of the year, until the clover would be fit for use, which was formerly directed to be sown.

In considering the foregoing, I do not see any extra outlay which can be said to render this commencement impracticable, nor any reason to suppose that the person's means of paying his rent will be in a manner curtailed; on the contrary, it appears to me that, besides the additional half acre of potatoes, the vetches substituted for the second crop of oats will produce, by the superior keep of the cow, in milk and butter, and the rearing of pigs, more than double what an inferior crop of oats would be worth; and that by these articles alone, the entire rent of a four-acre farm would, in common years, be paid, leaving the profit of the remainder of the farm to go entirely to the support of the family and the increase of the stock. But if it is clear from this statement that the farmer's circumstances the first year will not be *made worse*, it is still more clear that the second year they *must be made better*; for it is plain he will then have more than double his former quantity of manure, (owing to the turnip feeding and the second cow,) which, with the ashes of his remaining old ditches, will be fully sufficient to bring into cultivation all the remainder of the grazing land lying out to rest, which will now be made to yield him a valuable crop of potatoes and turnips, and he will have the manured land of last season, amounting to one and a half acres, in place



of half an acre, as formerly; besides all which, he will have as good a crop after the vetches as after his potatoes; and thus there will be no part whatever of the entire farm which will not be under profitable crop; and the clover, with what vetches he may think it necessary to sow, will supply him with the means of feeding his two cows in the house, by continuing which practice, he will have sufficient manure to keep his land constantly in good heart, and enable him to follow for the future any rotation of crops he may think proper.

In order to make what I have said more intelligible, I put the statement into figures, viz:

#### SUPPOSED CASE OF A FOUR-ACRE FARM.

Field No.		A.	R.	P.
1	In Potatoes (having only one cow, and not fed in the house), he will not be able to manure more than	-	0	2 0
2	In oats, upon last year's potato land	-	0	2 0
3	In oats, being the second crop after potatoes	-	0	2 0
4	In oats, being the third crop after ditto	-	0	2 0
5 } 6 } 7 } 8 }	In grazing, lying out to rest	-	2	0 0
Entire Farm		-	Acres 4	0 0

#### PROPOSED CROP TO BEGIN AN IMPROVED SYSTEM.

Field No.		A.	R.	P.
1	To be sowed in Wheat or Oats, being last season's potato ground, and laid down with Clover and Grass	0	2	0
2	To be sowed in Vetches, after first crop of Oats	-	0	2 0
3	To be sowed in Turnips of different kinds	-	0	2 0
4 } 5 } 6 }	To be planted in Potatoes,* supposed	-	1	0 0
7 } 8 }	Best part of the Grazing to remain for one cow, with Vetches	-	1	2 0
			Acres 4	0 0

\* I calculate the extra manure wanted to be acquired by burning the useless ditches: where the manure has been formerly so small, the fields must be small also, and the ditches more numerous of course.



## SECOND YEAR OF IMPROVED SYSTEM.

Field No:		A.	R.	P.
1	In Clover fit for cutting	0	2	0
2	In Oats (after Vetches), if a second cow has been got, one-half Vetches may be necessary, unless cabbage and kail are cultivated	0	2	0
3	In Barley (after Turnips), laid down with Clover and Grass-seed	0	2	0
4	In Wheat (after Potatoes), supposed planted on house manure, laid down with clover	0	2	0
5	In Oats (after Potatoes)	0	2	0
6	In Turnips, having been trenched up before the frost	0	2	0
7 8	} In Potatoes	1	0	0
		<hr/>		
		Acres	4	0 0

The ditches of Nos. 7 and 8 burned, and the produce of two cows fed in the house for most part of the year, will give the requisite manure; and on a comparison of the crops and the keep of two cows, the return appears to be four-fold the value of what it was, with the certainty of the land every year getting better.\*

I think any one who will afford a few minutes' consideration to the foregoing, will be of opinion that a satisfactory answer has been given to the question proposed, and that by a simple reference to the maxims laid down, a mode of recovery has been pointed out, which cannot fail to accomplish its object, having for its foundation, principles which may be successfully applied to the circumstances of every such farm as the case supposed: and a more important case cannot well be submitted to the consideration of the friends of Ireland, in its present situation. The plan recommended has

\* Simple as this rotation may appear to any educated person, I am quite sure very few countrymen would be able to act upon it from merely seeing it stated on paper. I therefore add, as an instruction that cannot well be mistaken, the advice, that all their manured land shall be laid down with clover and grass seed, with *first* grain crop, or reserved for vetches the following year; and to persist in this and the growth of turnips, until they can keep their stock in the house; after which, if they have any useless pasture remaining, let it be ploughed up and summer-fallowed, so as to prepare it for crop the following season, such as it may be fit for; and if too poor for grain, and manure be still scarce, the cultivation of vetches will soon bring it round to a profitable state.



been selected as affording a clear and concise exemplification of the operation of the principles laid down, but it is not meant to be a prescribed course that every one should invariably follow ; on the contrary, it may be changed and modified, in a variety of ways, according to the nature of the farm, which may call for the introduction of other crops. Thus cabbage, field peas, and beans, mangel wurzel, and many other things which I have not taken into account, may, in many cases, be found more desirable than those I have adopted. Where manure is scarce, kail, and thousand-headed cabbage, are particularly valuable ; they will grow with great luxuriance upon the back of a new made ditch, without manure of any kind, which proves that nothing more is required to insure a crop than to turn up new earth, by deeply trenching the ground before the frost sets in. Curled kail should be sown the last week in July, or the first week in August, and planted out as early in March as any soft weather takes place : thousand-headed cabbage should be sown in March, and planted out in June or July, as soon as the plants are sufficiently grown ; both will give a plentiful crop of leaves at November, and also the following spring, besides giving a large after-cutting, in the manner of rape, when shooting up to go to seed : but in whatever way the object is accomplished, still the principle of house-feeding, and a rotation of crops, must be equally attended to.

I am fully aware that a person whose resources enable him to buy lime or other manure, may at once succeed in making his entire farm productive, without waiting for the slower process, which, to his poorer neighbour, may be quite indispensable ; but the person with such resources, although he may hold a small farm, does not fairly belong to the class of those by whom the question was supposed to be put, and the answer therefore seems properly restricted to the single object of showing all those to whom it was addressed, that they might get on by their own industry, without any outlay beyond the means they may be fairly supposed to possess ; and that if they do not better their situations, it is not by reason of its being out of their power so to do : such being the case, persons so circumstanced, I trust, will not shut their eyes to what is so plainly for their advantage to see. If their farms should be somewhat



larger than the case stated, it may perhaps take a little longer time to bring them round, but still the improvement will be progressive, and they will be encouraged as they proceed, by seeing that every step is not only attended with its own peculiar advantages, but likewise facilitates that which is to follow; and I therefore cannot but hope, that any among you whose cases may resemble that which has been stated, may be induced to take what has been said into their most serious consideration, and to try the effect of the proposed change in their system of cultivation, notwithstanding the obstacles which may be started by those who are too indolent to exert themselves, or so much prejudiced in favour of old habits as to think they cannot be improved.

Such people, among other objections, will perhaps say, if we follow this plan, according as the manure increases, our grazing will be broken up, which is always a sure provision for our cows; and then, if the clover and turnips fail, what is to become of us? The answer to which is, that there is little reason to apprehend any failure in the clover crop, if the land is properly prepared, in which a person well qualified will be appointed to instruct you; but if from bad seed, or any other cause, a failure should take place, it will not affect the rye-grass sown with it, which may be cut as soil: and as any such failure will be evident by the month of September, there will be full time to put in winter vetches, annual clover, and early cabbage, to supply its place, and be ready for use before the rye-grass is consumed; and the succession of cabbages may be kept up until the succeeding crop of turnips is fully ripe, or spring vetches may be cultivated to any extent.\* In the mean time, the land upon which the clover is supposed to have failed, is by no means lost; the rye-grass will be in ample time to dig up the ground, and put it into turnips. It appears, therefore, there would be little cause for apprehension, even if such a failure did take place; and there is still less danger in regard to turnips, the different kinds of which may be sowed from the middle of May (when the Swedish turnip is sown) to the

\* The Italian rye-grass lately introduced, seems, by its rapid growth, well qualified to make up for all deficiencies of this kind.—(See Appendix.)



end of July, at which late period the Malta turnip will yield a full crop ; so that if one sowing was to fail, it may be supplied by another of a different kind. Some inconvenience may, however be felt, in case a failure should take place in a crop of Swedes, as they are relied upon for the latter part of the season ; but this also may be guarded against by sowing a sufficient quantity of rape to succeed the yellow Aberdeen, and yield food for the stock until the succeeding clover and rye-grass are ready for use. Others will tell you that it is an unnatural thing to confine cows to the house or straw-yard, and that they will give much more milk upon grass ; and this is very true in *summer*, if the grass is good ; the reverse, however is the fact, even *then*, if the comparison is made, with such grazing as the small farmer's cow is usually turned out upon ; but in *winter*, a cow well fed and kept warm in the house, will give twice, or perhaps three times as much milk as what she will when turned out and exposed to cold, and hunger, and wet, upon the bare hills I often see them on ; and, at that season of the year, materially injuring the land by poaching it with their feet, whilst wandering over it in search of food ; besides all which, it is to be taken into the argument, that the manure\* will be saved, and that where a poor man now keeps *one* cow, he would, upon the plan of house-feeding, be able easily to keep *three*.†

All these objections, when they come to be considered, are easily confuted ; indeed the people who make them, do it

\* Mr. Cobbett estimates the quantity of manure which may be accumulated by the owner of one cow fed in the house, to be sufficient to manure one acre ; and in these calculations he is not bad authority ; but I only calculate on its manuring three roods.

† Cattle fed upon clover, either in the field or in the house, (when it is given too soon after being cut,) are liable to its fermenting in their stomach, which, if not observed in time, will occasion their death. The usual remedy is to stab them in the side, in order to let the air escape : but this is no small injury to the animal ; and the cure may be effected by putting down the throat an egg-shell full of tar, in which three or four drops of the spirits of turpentine has been mixed. Cattle getting too many raw potatoes are liable to the same complaint. Some garlic pounded and made into a ball, with a little oat-meal and water, will give relief in a very short time also, and no countryman's garden ought to be without some garlic, were it only for this purpose.



more as a cloak to cover their own slothfulness, than from any belief in the truth of what they advance; for the case is so plain, and the benefit arising from feeding the cattle in the house, and having such an abundance of manure as to render the whole farm as rich as a garden, is so apparent, that no one can avoid being sensible of it.



## CONCLUSION.

Pressing the Importance of the Subject, and Explaining the Plan of Assistance to be given—Advantage of Planting Timber for Fuel—Present State of the Small Farmer, and the Appearance of the Country, contrasted with what they might be—Anxious Desire that this Address may be attended with some good effects.

THERE are, nevertheless, many well-meaning people such slaves to habit, and so little able to form a just estimate of what their own industry and exertion would enable them to accomplish, that they despair of surmounting the difficulties which surround them; and it has often fallen to my lot to be told, with a perversity of reasoning not a little provoking, “that such a plan might do very well for the rich, but how could any poor man *afford* to farm his land in that way?” And, notwithstanding, it is evident the poor man can least of all *afford* to lose any gain which might be made by following a better system; he seldom thinks of making even an attempt at what appears to him so far beyond his utmost efforts; whereas, if the attempt were made, scarcely any industrious man could fail of success. From a sincere desire to benefit all of you, but particularly those of this unfortunate class, who, under existing circumstances, seem likely to be deprived of their small holdings, if they do not hit upon some expedient so to better their condition, as to be no longer a disgrace to the properties they inhabit, I have endeavoured, in the foregoing Address, (as being the first step to improvement,) to convince you of the wretched plan you have been hitherto pursuing, and of the beneficial change which might soon be brought about by adopting some such alterations as I have been suggesting. In this, I hope, I have at least so far succeeded as in some degree to weaken your attachments to old customs, and dispose you to follow such instructions as may be given to you; and in order to set aside any excuses that might be made, either on account of ignorance or inability, I have, with the concurrence of your landlords, engaged two Scotch farmers or agriculturists, for the purpose of giving the instruc-



tions you so much require. You will find them to be practical men, who have had experience of every kind of soil, and know how each should be treated. After minutely examining your different farms, they will point out to you how they are to be drained, cleaned, and prepared for the growth of green crops, so as to introduce the plan of house-feeding and accumulating of manure, which has been already insisted on. Thus your want of skill in the management of your land will at once be remedied; and then, to provide you with manure, (the want of which, at present, I am aware would incapacitate you from cultivating the crops recommended,) your landlords have kindly consented to lend such of you as may require assistance, as much lime as will be sufficient to insure you as many potatoes as you may require for your families; on condition that the house manure you may be possessed of shall go to the other crops which the agriculturist may point out. Thus nothing will be wanting to the perfect cultivation of your farms but your own industry and that of your families; for the above-mentioned assistance will be continued to all such as show themselves deserving of it, until they are brought into a situation no longer to require it. My employers, therefore, I repeat, having gone to such expense and trouble to better the condition of the small farmers on their estates, and the benefit to be derived by following some better plan of cultivation being so evident to the commonest understanding, no one who, by his own want of industry, fails to take advantage of the assistance offered, can have just grounds of complaint, if the land, which he refuses to cultivate, is taken from him, and given to some of his more industrious neighbours, which will most assuredly be the case, when a fair time for making the experiment has been allowed.\*

I trust few will be found so blind to their own interests as to force their landlords to this painful alternative; and it is with great pleasure I look forward to the prospect of seeing their estates peopled with a thriving tenantry, and covered with neat and respectable cottages, and the farm divided by hedge-rows of useful and ornamental timber, with underwood

\* He who leaves his land uncultivated, and not producing one half of what it ought to do, may not unaptly be addressed like the unfruitful tree in the parable—"Why cumber ye the ground?" And having met with reasonable care and indulgence, may, with equal justice, like it, be no longer left in possession of the soil.



for fuel. The *cattle being kept from injuring these plantations*, they would soon come to a luxuriant growth ; and, I am confident, would not only yield a quantity of valuable timber, but also sufficient faggots to afford a cheerful fire in the winter's evening : and if the farmer has a lease, and registers the trees planted as here recommended, he may have, at the expiration of his tenure, even if the farm be a very small one, one hundred or two hundred trees, from twenty to forty years old, according to the duration of his lease, *well grown*, which they will be, if the cattle are home fed, and thus prevented from injuring them ; and these trees he cannot be prevented from selling at their full value ; and if his landlord even should turn him out, (which in such a case is not likely,) he would not have to go away empty handed ; and thus the *bank* of his ditch would be to him a *savings' bank*, the most economical and the most productive he could have recourse to.

When the present state of the small farmer is considered—reduced, as he often is, to potatoes and salt, and perhaps even a scanty supply of these, with a house almost unfit for a human habitation, and suffering under a scarcity of both fire and clothing ; and then look forward to him in the enjoyment of the comforts of life, well fed, well clothed, and well lodged, with a cheerful fire on the hearth, and his fitch of bacon in the chimney—what a change is opened to the view, and what an ardent wish arises to see it realized !—Again, when the beautiful variety of surface, which this country affords, is now observed bleak, dreary, and naked ; and then look forward to it covered with well-built cottages, well laid out farms, and thriving plantations, with contentment and its natural companions, good order, peace, and prosperity reigning around, surely every one ought to be tempted to put his hand to the work, and as far as his influence extends, assist in bringing about a change so desirable. Connected as I have been with you now for many years, I feel most sincerely desirous to give effect to the kind wishes of your landlords, and to use the means placed at my disposal, and the influence my situation as land agent gives me, to promote your comfort and happiness. It is that feeling alone which has prompted me to take the trouble of thus addressing you, and to devote so much time to personally enforcing the requisite attention to the instructions of the agriculturists who



are engaged for the purpose of directing you in the selection of the crops best adapted to the soil and situation of your farms, and the proper mode of cultivating them. Their appointment renders it unnecessary for me to enter into any discussion upon those subjects,\* which would require more space than would be suitable to this Address, already prolonged much beyond my original intention. All I contend for is, that you shall cultivate such a succession of crops as will afford a plentiful supply of moist food for your cattle in the house, during the entire year. Experience has fully proved that one-fourth of the land usually employed in this way will suffice: and as the practice of home feeding has the additional recommendation of producing the manure necessary to bring the land so saved into profitable cultivation, common sense will justify me in *insisting* upon the practice being adopted, which, under the orders of your landlords, I am determined to do. I have only further to add, if my exertion should in any manner bring about that improvement which is so much required in the cultivation of the soil, upon which your welfare and happiness so much depends, I shall feel myself most amply rewarded. But if the perusal of the foregoing should have no other effect than merely to awaken your understandings to the consideration of the subject, and induce you to think how every thing may be turned to the best advantage, and how you may make the most of every opportunity which may offer to better your situation, and increase your comforts; I shall even then congratulate myself that an important service has been rendered to you and your families, by your sincere friend and well-wisher,

WILLIAM BLACKER.

P.S.—As nothing which tends to increase your comforts in any way is foreign to the nature of this Address, I cannot help calling your attention to the high price you often give for oatmeal, when wheaten meal might perhaps yield a much cheaper and more nourishing food. If you buy wheat and get it ground at any common country mill, your hundred weight of wheaten meal will not stand you generally more, if

\* In this respect I would beg to refer to Mr. Martin Doyle's "Hints to small Farmers," which give most valuable information, not only regarding the cultivation, but also as to the respective merits of the different crops at present cultivated in this country.



so much, as a hundred weight of oatmeal. Now, if you take and mix a well beaten up egg with a pound of the wheaten meal, and wet it with milk made boiling hot, it will produce near a pound and a half of excellent bread, which, by being warmed before the fire, will be as good the second or third day as the first, and will contain nearly twice the nourishment which a pound of oatmeal will yield. It also surprises me that *in winter*, when milk is scarce, you do not try to make a substitute of broth. A single ox head, which you may buy in any market town for a shilling, with a small quantity of groats or barley, and a few onions, cabbage sprouts, sliced turnips, or any thing of that kind, will, I am informed, make twenty quarts of broth of most excellent quality; and, again, in summer, when potatoes get soft and bad, if the skin is taken off, and they are put into a pot to stew, with about three pints of water to a stone, and half a pound of bacon, cut into very small pieces, put at the top, with a little pepper, salt, and onions, and the pot kept closely covered, it will make a wholesome and palatable mess for an entire family. Any one wishing to get more particular information on this subject, may easily find persons able and willing to give it; and what tends to the comfort and satisfaction of a family two or three times every day of their lives, is surely well worth being attended to. Almost all of you know what a good mixture beans and potatoes make, and what nourishing food it affords; and yet how seldom do you see raised the small quantity of beans which will be required for this purpose.



## APPENDIX.

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### No. I.

#### *Useful Hints for the Labourer, published by the Labourers Friend Society.*

“He that tilleth his land shall have plenty of bread; but he that followeth after vain persons shall have poverty enough.”—*Proverbs xxviii. 19.*

SAVINGS' BANKS.—Should a young man of 18 begin to save 2s. a week, and go on regularly for ten years, he would, at the age of 28, have in bank, reckoning his savings and the interest, about 60l.; the value of which, observe, consists very much in the manner of acquiring it. For suppose him to have spent those ten years, as is too commonly the case, working half his time, and drinking and idling the rest, and suppose the sum of 60l. to be then given him, what effect would it have? Would he not most likely drink more and work less? But when a man has set his mind upon saving, he will almost necessarily contract such habits as will make his savings useful. He will find hard work grow easier, because it increases his gains; he will shun idleness, because it stops them; he will turn away from the ale-house, because it swallows them up; he will be content with frugal fare, because it adds to his savings; and though he may look forward to the comforts of marriage, he will be in no hurry to bring upon himself the charge of a family. Being careful himself, he will look about for some careful young woman; and they will resolve not to be married till they can furnish a house, and have some money in store. This will make them doubly industrious, and doubly careful; and then their savings will mount up so fast, that, perhaps, they will begin to have higher notions, and will put off their marriage a little longer, till they have saved enough to set up on a small farm, or in some business, where they think they can, by joining their savings, become richer, though married, than they could if separate. Here marriage is, indeed, a blessing! The children will



have advantages in education which their parents did not possess ; and though all this cannot happen to all, it is yet impossible to foresee what benefit may arise to a man and his descendants, from placing a portion of his early earnings in a savings' bank. One shilling a week saved, will, with the interest, amount to 20*l.* in seven years ; three shillings a week will amount to 60*l.* in the same period. If a man who earns 30*s.* a week deposits 10*s.*, he will possess, at the end of five years, 140*l.* ; and if he should marry a female who has been able to accumulate half as much, they would together possess no less a sum than 200*l.* to begin the world with. It is true that a savings' bank holds out the best prospect to those who are young and unencumbered ; but almost all may derive some advantage from it ; at least they may point out to their children the easy means of securing their own comfort, and it will be strange if, out of a large family, some do not prove able to assist their less fortunate parents in their old age. Teach but a child to put part of his first little earnings in the bank, and, in all probability, poverty will not overtake him to the end of his life. Teach one child to save, and others will follow the example, till industry and frugality become as common as vice and misery are now. If a boy of 12 years of age can lay by 3*d.* a week till he is 14, then 6*d.* a week till he is 16, and then 1*s.* a week till he is 18, by which time he may be supposed to have learned his business, he will have in the bank, adding the interest of his money, 10*l.*, besides having acquired habits of industry and carefulness. It has been shown above, what he may lay by in the next ten years ; and what he will be at the end of that time, compared with men of his own age who have not saved, and who are neither industrious nor careful, need not be shown. Many who have been wild in their youth begin to be steady when they marry ; but bad habits will break out, and an increasing family presses so hard upon these who have nothing beforehand, that they often become discouraged, and sink under the evils of poverty. They need not, however, despair. Let them consider if they have not some inclination which they now and then indulge at the expense of some of their comforts, though the thought of it afterwards only causes them pain ; let them try to turn that inclination into an inclination for saving ; it will soon grow upon them, for it gives pleasure both in deed and in thought ; it will go with them to the plough, it will stay with them at the loom, and it will sweeten the labour of both. Let them only make a beginning, if it is but with sixpence ; if necessity compels them, they can take it back ; the attempt will do them credit, and perhaps they will be



more fortunate another time. Let them consider every penny they spend ; let them examine if they cannot do without something which before they thought necessary. If they happen to have money in their pockets, without any immediate use for it, let them take it to the bank, and trust to their industry to supply their future wants. A shilling, not called for, soon tempts the ale-house ; it is soon spent there, a shot is soon run up, a day's wages are soon lost, and thus 5s. are gone without thought and without profit. Now, 5s. in the bank would make an excellent beginning towards rent, or towards clothing. Scrape a little money together, and some pounds in the year may be saved by laying in potatoes, or coals, or flour, at the best hand, instead of in very small quantities, and on credit. By buying two pair of good strong shoes at once, so that they may be always well dried before they are put on, and mended as soon as they want it, two pair will last as long as three that are constantly worn. Here are at least 10s. saved, besides the saving of health and strength. There are many other ways of saving, by means of a little money beforehand ; and it is clear that a man and his family, who earn even moderate wages, may, by good management, live better than they did before ; or, if they prefer it, may lay by something at the end of the year. If a man wants to borrow a little money on any particular occasion, or for any particular purpose, what is so likely to obtain him credit as his having been a regular saver in the bank ? If he has, unfortunately, not been so steady as he might have been, what is so likely to get him a character as his beginning to put money in the bank ? But there is scarcely any end to the advantages of such an establishment to those who choose to avail themselves of it ; for unmarried women, especially, it is particularly desirable ; they may there place their savings in safety, without trouble or expense ; it gives them the best chance of making themselves comfortable if they marry, and independent if they do not. As yet, savings' banks have not been established long enough to prove more than a very few of the good effects which may be expected from them. They are calculated, however, to serve the country in the best of all possible ways, by enabling every man to serve himself ; they hold out encouragement to youth, comfort in middle life, and independence to old age, and a perpetual opportunity to men to improve their condition from generation to generation.—(From " Observations on the Utility and Management of Savings' Banks," written long since by Mr. Walker, and quoted by him in *The Original*, No. XXVII., p. 413.)



ROTATION CROPS  
FOR A COTTAGE ALLOTMENT OF TWO ACRES.

1	Oats or Barley laid down in Clover.....	.....
2	Clover for soiling.....	.....
3	Autumn Potatoes followed by Rape or	Stubble Turnip.....
4	Winter Potatoes.....	.....
5	Vetches followed by Rape or Stubble Turnip	.....
6	Winter Potatoes.....	.....
7	Turnips.....	.....
	House, Offices, and Straw Yard.....	Garden.....

Lane.



The preceding is a plan of cultivation adapted to a cottage allotment of two acres, and is supposed to be measured off, twenty perches in front by sixteen perches in depth; so that every two perches make a rood, which is marked by a line intended to represent a furrow, communicating with the double line up the middle, representing a path, by which manure may be wheeled up in a barrow from the straw yard. The house, offices, and straw yard, are supposed to occupy half a rood, leaving the other half rood for the garden, and the remaining seven roods are for the rotation of crops, which are set down as they ought to stand the first year, and are so contrived that the crop which is in No. 1 field the first year, shall be in No. 2 the second year; and so on in No. 3 the third year, until it will have come to No. 7 the seventh year—each crop moving a division on every year; so that, in the beginning of the eighth year, the oats or barley will have come round again to No. 1 field, and all the others in succession, precisely the same as they were at first. This has been so arranged, in consequence of observing that country people are confused by the rotations which are set down in the different publications upon the subject of cottage allotments, which, it is hoped, this arrangement will obviate, as the No. of the fields correspond with the years of the rotation, and point out that the crop in No. 1 the first year, will be 2d, 3d, 4th, or 5th field in the 2d, 3d, 4th, or 5th year of the rotation; and when the field is established in which the first crop of oats or barley is sowed, then all the other crops occupy the following fields in the same succession and order in which they stand in the beginning. By this arrangement the cottager will have one rood of grain, one rood of turnips, three roods of potatoes, one rood of vetches, one rood of clover, and two roods of stolen crop, viz. rape after vetches and stubble, turnip after early potatoes. It is conceived that three roods of well manured land, in potatoes, together with a rood of grain, and the produce of their garden, will, with the milk of the cow, supply food for a man and his wife and two children; and that the rape and stubble turnip, with the rood of *vetches*, *clover*, and *turnips*, will feed the cow all summer, and admit of a little clover hay being saved for the winter, besides feeding two store pigs, with the help of cabbage from the garden, the kail which may be reared among the potatoes, and the refuse of the house; and the profit on selling off the grown pigs, and laying in younger, with the spare milk and butter of the cow, ought to do more than pay the rent, and perhaps admit of their fattening a pig for their own use.



## No. III.

*List of different Agricultural Seeds for an English Acre.*

Seed Wheat.....	12 stones	Flax-seed .....	2½ or 2 bushels
Seed Barley.....	9 do.	Rape.....	14 lbs.
Seed Oats.....	14 do.	Turnip-seed .....	4 lbs.
Seed Beans in drills.	14 do.	Clover-seed.....	12 lbs.
Seed Peas in drills...	12 do.	With perennial rye grass	1½ pecks }
Seed Vetches.....	12 do.	Rye grass without clover	3 bushels.

## No. IV.

*List of Garden Seeds in quantities suited to Cottagers use.*

- 1 Pint of common Peas will sow 14 yards of a drill.
- 1 Pint of Marrow Peas will sow 20 yards of a drill.
- 1 Pint of Beans will sow 22 yards of a drill.
- 1 Ounce of Onion seed will sow 10 square yards.
- ½ Ounce of Leek seed will sow 6 square yards.
- 1 Ounce of Carrot seed will sow 10 square yards.
- 1 Ounce of Parsnip seed will sow 12 square yards.
- ½ Ounce of Cabbage, Savoy, Brocoli, or Cauliflower seed will sow between 3 and 4 yards square.

✂ It is supposed that all the above Agricultural and Garden Seeds shall be of best quality, and that the ground they are sowed on shall be completely clean and free from weeds.

## No. V.

*Extracts from the Account of the Markethill Agricultural Meeting, for the year 1833.*

Mr. INGRAM being called upon, as having got the first premium, to state the result of his experience in house-feeding, stated that, on a former occasion, he had excited some surprise by declaring that he paid the entire rent of his farm, consisting of twenty-two acres, by the sale of butter alone—but that he had now the same thing to state over again, as he would do the same this year, which he proved



most satisfactorily to the company by a regular detail of what he had already realized. He spoke in the highest terms of the system, and was listened to with the greatest attention.

Mr. MOSES GREER, having obtained the first prize in this class, being called on, gave a very clear and satisfactory account of the productive state of his farm—the unnecessary ditches having been all piped and levelled, except one, which would be done before February. That he would have no unproductive land whatever in his entire farm, and the whole of it in the very best condition. He said his entire stock of three cows were fed upon one acre of clover, and a small quantity of vetches, and that he had no grazing whatever. He said, like Mr. Ingram, that he paid his rent and more by butter, and ascribed the entire improvement in his farm and in his circumstances to his having adopted the plan of house-feeding, which had enabled him to manure his land as it ought to be; and that, in order to increase the quantity of this article, so important to a farmer, he had found it his interest to collect every weed from his ground, and the high road adjoining, for the purpose of bringing them into the cow-house; and that, by attention to this, a farmer would have more manure, from one cow fed in the house, than he would have from three cows fed, as they usually were, upon pasture.

A very animated discussion afterwards took place upon the propriety of harrowing in clover seed upon the growing wheat crop in April and May; and Mr. BECK, of Mecantrim, being referred to, stated that he had been induced to try it in spring, 1832, by the advice of Mr. Bruce, agriculturist on his Lordship's estates, and that it had been attended with the best possible effect. The wheat crop was improved by the harrowing and rolling, and the clover was earlier and more luxuriant than any other in the neighbourhood. He added, that he had followed the same practice this last spring with equal advantage to his wheat crop, and that the young clover was there now to speak for itself, and that nothing could have a more healthy appearance. The general adoption of this plan would prevent the ruinous practice of putting in a crop of oats after wheat, which leaves the land in an impoverished state, but, by interposing a crop of clover, the crop of oats, or winter bere, may be had after it without injury.



*Extracts from the Account of the Markethill Agricultural  
Dinner of 1834.*

MOSES GREER, of Corlust, as entitled to the first premium, for best stock fed upon the smallest quantity of land—it appearing that he had fed his stock, of four cows and two calves, upon the astonishing small quantity of one acre and two roods of land all summer, being about one rood and four perches for each cow, after allowing for the calves, and had three roods of turnips and one of rape for winter—being called on to give an account of his farming, said: My lords and gentlemen, I hold eight acres and three roods of land, which I have now got into the highest condition; and I shall, in future, be able to keep it so, without going to the expense in lime which I have heretofore been at, by reason of the great quantity of manure I make from my increased stock of cattle, consisting of four cows and two calves; and it will surprise you to hear, my lords and gentlemen, that this stock has been fed this last summer, and up to the present time, on clover and vetches; upon the identical same piece of ground which, when formerly in grazing, fed only one cow, and that very poorly. My land is held part at 23s. and part at 8s. 3d. per acre, and my rent amounts to £7. 14s. 6d. yearly; and I have already sold butter to the amount of £11. 4s. clear of all deductions, and have had enough of milk and butter for myself and my family besides. The abundance of manure has enabled me to set as many potatoes as my neighbours, holding the same quantity of land, and I have as much crop too, besides having my turnips likewise. In conclusion, my lord, I am satisfied there is no way in which land can be made to produce so much, or by which it can be brought into such heart, as by the soiling system and four-course rotation of crops, from which I expect every year to derive greater advantage; as I may say I am only just now beginning to feel the benefit arising from it, my land being now all perfectly clean, every inside ditch levelled, not a spot in the whole that is not productive, and not any of it whatever in pasture.

JAMES ROLSTON, being next called on, said: I am likewise an advocate for green feeding; I had more clover than fed all the stock I had, although I had more than doubled it, and I was enabled to save three five-fathom cocks of hay, which will leave me all my straw for manure. After cutting my early vetches, I sowed the ground, ridge by ridge, as I cut it, with rape, which I am now cutting a yard long, and giving to my cattle; so that I shall not have to begin to



my turnips for some time ; and it will be again fit to cut in April next, when the turnips begin to fail. I have also levelled every useless ditch ; and my land, so far from being exhausted, by the four-course rotation, is every year becoming better.

A discussion here took place whether it was better to cut rape now, and again in spring, or to let it stand, and by that means have *one* heavy crop, in which Mr. Matthew Black, Mr. Bruce, and several others, took a share—from which it appeared that their opinion was, there could be no very great difference in the weight, but that, if very far forward, the danger of snow injuring it, and the convenience of having it come in when the clover failed, made it eligible to cut it at this season, when there were no late vetches to supply its place. Mr. M'Kean stated, that it would be much more substantial food by letting it stand to spring, in which Mr. Black agreed.

Mr. INGRAM, having got the premium for best cultivated farm, being called on to give an account of his management, said : I am still of the same opinion as I have formerly expressed, of the benefit to be derived by green crops and house-feeding, which I continue to practice. I find I can thereby increase my stock, and my crop also, and have manure for my potatoes and my turnips ; besides, by this means, I find my land improving under the four-course rotation, and though I am paying according to a late valuation, I am still able to say, as I said last year, I shall be able to make my rent from my dairy.

A discussion here arose, whether, by growing turnips, and the practice of house-feeding, the manure would always be so increased that there would be plenty for every purpose ; and that any farmer might, thereby, have a greater abundance of potatoes than he otherwise would, and have plenty for his turnips besides. This opinion seemed decidedly to prevail.

THOMAS BRUCE, having got the premium for best crop of turnips, being called on to give an account of his farming, said : When I came into possession of my farm, in 1831, there was no more than about half an acre of potato ground, and this in such a dirty bad condition that it had to be dug over with a grape, in order to clean it, before it could be sowed with grain and clover seed. The rest of the land was in a miserable exhausted state, not fit to produce any thing ; and I was then possessed of but one cow, and had no meat to feed more. That year I sowed a few turnips upon what manure I had to spare, by employing lime compost for my potatoes ; and the next spring, between compost and cow-house manure, I was able to set an acre and a half of



potatoes, and half an acre of turnips. That year I was able to house-feed, upon the clover and some vetches, two cows, and had plenty for them all winter. Next spring I had so much manure, that, with some assistance from lime compost, I was able to set two acres and a rood of potatoes, and three roods of turnips ; and, having sowed more clover, I was enabled that season to keep three cows and a horse—which stock I still have, with the addition of a calf ; and have fed them this season on five roods of clover, two roods of vetches, and one rood of grazing ; which, being chiefly on a rocky bottom, cannot be broken up. And if an acre was allowed for the keep of the horse, and twenty perches for the calf, this would leave only one rood and four perches for the summer feeding of each cow ; and this, with one rood of turnips for each during winter (which would allow, at thirty-four tons per acre, near ninety pounds a day for each for seven months), would only make eighty-four perches, or little more than half an English acre for the year's keep. And I have a rood of rape as a stolen crop besides ; so that I have *plenty* of food for them ; and my land is improved to such a degree, that there is more than three times the return from it than what it formerly gave ; and I shall now be able to keep it in heart by the manure made by house-feeding, without any of the expense for lime which I have been formerly at.

Mr. HERD, Steward to the Earl of Gosford, declared that he considered Swedish turnips as being equally nutritious as any potatoes, and much more wholesome food—that although raw potatoes might fatten stock for market, yet, as a permanent food, there could be no doubt they were unwholesome ; and mentioned the result of a wager in Scotland, as to the effects of potato and turnip water on cattle, to decide which, two cows were put up, one of them having potato water mixed with her food, and the other turnip water—the consequence of which was, that the former declined daily, and finally died, whilst the other continued to thrive as well as could be wished. This showed that there must be something unwholesome in the raw potato ; for if it was not in the potato it could not get into the water.

Mr. BRUCE coincided with Mr. Herd, in regard to the injurious effects of potato water and raw potatoes, which produced, in a year or two, inward unsoundness.

Mr. NATHANIEL GREER stated, that he likewise disapproved of the use of potato water, and also raw potatoes, as a permanent food, but that he considered boiled potatoes and crushed oats to be the food that fattened cattle quickest, which was universally assented to ; but



the addition of oats destroyed the comparison. And it was said that in general those who favoured potatoes almost always gave some addition of that kind, which was not fully put forth in their calculations.

Mr. M'KEAN said, that even when cattle were fed on boiled potatoes after turnips, they always fell off in their condition, but when changed from boiled potatoes to Swedish turnips, no falling off, but an improvement took place. On the whole, it appeared that Swedish turnip had the advantage in the opinion of the company.

*Extracts from the Account of the Markethill Agricultural Dinner for the year 1835.*

Mr. BRUCE, having obtained the premium for best stock, being called on, rose and said—When he came to his farm, four years ago, he could only keep one cow ; and two acres of such pasture as it afforded was barely sufficient to summer feed her—that he had gradually increased his stock, from year to year, until he had now three good cows and a horse on his eight acres of land, and had now more acres manured than he then found roads. He had also sold £9 worth of butter this season, and provided for his family consumption, which is not small, and he is making more every week. This will more than pay the rent of his entire farm, and leave the *rest of the produce* to himself, which far exceeds anything the ground ever produced under the old system.

Mr. THOMAS INGRAM said, that he had now got his farm into such a rotation, that he never sowed a second crop of grain in succession, the benefit of which he was now fully aware of. He formerly kept but three cows and one horse, now he had seven milch cows, two heifers, and two horses, and can continue to pay his rent by butter alone this season, as well as formerly ; and had more grain than he ever had under the old system.

Mr. SIMPSON, being called on, said—I have now had ample experience both of potatoes and turnips, and can declare my opinion to be, that the turnips are the most beneficial to the farmer, from the quantity of manure they produce ; and I think them more useful under the present increasing quantity of flax culture, than ever they have been before. Flax leaves nothing to renew the soil or enrich the farm ; and if the farmer cultivates it to any extent, and does not take some additional means of making manure, his want of foresight will ruin his



land and himself too—for he can have neither flax nor any other crop without manure ; no other crop makes the same quantity as the turnip crop, and, by growing it extensively, I find I can have more manure for my potatoes than I otherwise would, and have plenty for my turnips besides. I can further say, since I became extensive in green-feeding, I have added from six to seven acres to my crop, and have greatly increased my stock besides.

Mr. NATHANIEL GREER fully concurred in the same opinion, which was confirmed by Mr. Bruce and several others.

JAMES BRADFORD and JOHN HOGG, having obtained premiums for the best cultivated farms on the four-course rotation, James Bradford, being called on, said—When I came under Lord Gosford, I owed £5 an acre of arrears ; I had no property whatever, nor meat for my family. I have now, thank God, and the assistance he has been pleased to send me through Mr. Blacker, plenty of provisions to do me until next crop, though I had none then. I have also two cows and a pig, and then I had neither one or other. My land, also, is now in heart, and produces as much in one year as it then would in three ; and this season I expect to pay up all the arrears that are against me, and I will only owe the purchase-money of a small piece of land his honour added to my farm, as an encouragement ; and when I get clear of this, I think I will be comfortable, and very thankful for all that has been done for me.

JOHN HOGG was then called on, and stated that he had been in distressed circumstances before Lord Gosford bought the property, and was intending to go to America ; but having got encouragement from Mr. Blacker, he had followed his advice, and his farm was now all under the four-course rotation ; he had two cows and a horse, had a cart and a plough ; owed no rent now, though he was deep in arrear formerly ; had bought more land, and was in the way of doing well. The new system kept himself and family all busy, and paid them well for their labour. He formerly had been obliged to pay £7 for potatoes for his family, and now he had £3 worth to sell, owing to the manure from his turnips.

Mr. MITCHELL, having got a premium for best crop of rape after vetches, stated that he had greatly increased his stock, and improved his land, by the practice of green crops and house-feeding, and that he would be able to improve more still by the same means. He was only just commencing, but he would be able to say more next year. In the mean time, he could say the house-feeding was the best thing ever was introduced.



JOHN WHITTLE, having got a premium for best rape after a grain crop, stated that he had formerly only one cow and a horse upon six and a half acres. He had since, for his exertions, got from Mr. Blacker the addition of another acre, and he now kept *well* two cows, two heifers, and his horse. He had levelled all his ditches, and filled up an old quarry, and covered rocks with soil, so as to gain a full rood of land, on which he had this day a capital crop of turnips, and had his rape after his grain by stooking the grain crop in on one side of the field, and sowing the other, and giving it the summer manure, which he had plenty of.

MICHAEL CLARKE,\* being called on, said—When Mr. Blacker first came to my house I had fallen into arrear; distress of mind, and ill health that it brought on, had driven me to a state of despondency; I did not care what became of me, [or whether I was turned out or not. I was in despair; and my family in misery, surrounding me. He told me he would help me if I would do as he directed, and that he would send a person to instruct me, and that the place would be worth having if it got justice. I did not believe that it ever would have turned out as he said it would; but, as he was so kind, I promised I would take heart again and do as I was bid; accordingly, Mr. Bruce came and pointed out what was to be done. I got up my spirits, and my health got better. Mr. Blacker lent me a cow, when I got clover to feed her on. The first year I was able to pay nothing, but he saw I was doing my endeavour, and he did not press me. The next year, I paid a year and a half; the one after, I paid another year and a half; and the one following, I paid two years; and now I expect to be able to clear off all, and to have my cow and pig to myself. I have a new loom besides; and all my ditches are levelled, and the whole farm in good heart. My health is got better, and I have no more to say, gentlemen; but, thank God and his honour, I am in the way of doing well. I have meat for myself, and meat for my cow, and meat for my family, all provided for the next twelve months, and it is long since I was able to say so before.

The Chairman then rose and said—Gentlemen, I cannot help calling your attention to the competitors in this class; their example shows what *diligence gains* and *negligence loses*. These, you see, have gained their crop after their grain upon the same ground, by stooking the corn as it was cut on one side of the field, and manuring and sowing the cleared part of the stubble; and so have now to congratulate them-

\* This is the man who is alluded to in Mr. B.'s Pamphlet, who had his daughter assisting him in wheeling earth in a barrow.



selves on having, by this means, obtained ample food for their stock for six weeks of the year most trying to the small farmer, viz. from the first of April to the middle of May.

Mr. MOSES GREER then said—When I came under his Lordship I was a tradesman, and had just saved as much as enabled me to buy a bit of land of about five acres from my father, out of his farm; but I was without stock, or manure, or skill how to labour it. Mr. Bruce, the Agriculturist, came about, and, as he reported me willing to work, Mr. Blacker gave me every assistance I stood in need of. As I succeeded well, he laid me off more land, and last year I cleared off all that was against me; and this year the farm adjoining me being to be sold, I ventured to buy it, seeing the way that lime and manure, and draining and weeding, made land produce; and I am not afraid of getting on, as I am happy to say I have now, not *three* times, but *four* times the quantity of land I started with, all but a rood, and am doing as much as I possibly can to bring it to a proper state; and next year, I think I will be higher placed in the premium list.

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*Extracts from the Account of the Markethill Agricultural  
Dinner for the year 1836.*

According to the usual practice, the health of JAMES JENKINS was given, as having obtained the first premium for stock, and he was afterwards called upon to state what advantage he had derived from the plan he was pursuing; this he did in a manner very satisfactory to the company. He said—

I am able to say, gentlemen, that since I have followed the plan recommended by Mr. Blacker, I have been able to change my stock, with considerable profit to myself, from a very bad stock to a very good one, as my getting the first premium shows; and though I was then pinched to feed them poorly, I have now plenty to feed them well; and whereas I had only two cows, a heifer, and a poney formerly, I have now five cows, two heifers, and one good horse, on my sixteen acres, kept on clover and vetches in summer, on cabbage at this season of the year, and turnips in winter and spring. I prefer early York and sugar-loaf, and flat Dutch cabbage, to the curled kail, for they give more food at this season; and if the plants are put in about three inches under the manure, the potatoes can be dug out without injuring them; and as they grow into the trench they do not overshadow or in-



jure the potato as the curled kail does. I am also happy to tell you, gentlemen, that I find the produce of the farm is increased, as well as my stock. Formerly I could manure but an acre and a half of potatoes, and that but indifferently, but now I have this year four acres of potatoes and turnips manured in the very best fashion; and you all know the more manured land you have in the farm, the more grain you will get out of it. Many gentlemen, from distant parts, have come to see my farm, and I am always glad to see them, and have always something pleasing to show them. Gentlemen, I have nothing more to say, but that I am well content, and determined to persevere in the plan I have now been so much the better of.

SAMUEL PARKS, of Lurgyross, being next called on, said—I hold 4A. 2R. 20P. of land, at a rent of £4. 9s. 2d.: upon this I feed two cows; and, after providing my family, I have sold £7 worth of butter and milk, being one-half more than my rent. My cows are house-fed, and in capital condition, as my getting a premium shows.

After him, JOSEPH THOMPSON, of Grayhills, was called on. He said—I have 11A. 3R. of land, and on this I have three cows, a heifer, and a horse. The half of my land was formerly in grazing, and my stock far inferior in number and condition. I consider the four-course rotation as an excellent plan, and mean to persist in it; and I think I will be able to increase my stock next season from the fine appearance my clover now has.

The Chairman then introduced the reading of the premiums for the best cultivated farms, according to the four-course rotation, by stating that the smallness of the quantity of the land kept in grazing, proved, in a great degree, the profitable occupation of the rest of the land, and mentioned that the certificate had been given to Mr. Thomas Ingram, of Drumhoney, who I have, in former accounts, had often to mention.

The list being read out, the Chairman reminded Mr. Ingram, who had got the certificate, how doubtful some of the company were formerly about the produce of his dairy, and asked him had he now the same thing as then to say about paying his rent thereby?

Mr. INGRAM, being thus called on, said—Gentlemen, I can not only say the same thing, but I can say better. I hold twenty-three acres of land, and nobody can say I hold it too cheap, when I tell them I pay £25 a-year rent. My stock is seven cows, two heifers, one calf, and two horses, and they are all in good condition; the butter has already produced £26, which is a pound over the rent; and I expect to make it £30 before the year is out, as the price is so high. And I will tell you more, gentlemen, I had nine hundred stooks of excel-



lent oats, and an acre of flax, and all early in and well saved ; so that I could make four times my rent off my farm.

This account seemed to give the greatest pleasure to all present, and Mr. Ingram's health was drank most cordially. The mention of the produce of Mr. Ingram's dairy afforded much surprise, as he keeps three farm servants, and must, therefore, have great consumption at home. The Chairman, however, said he understood there was another in the list that would surprise them still more. He then passed a high encomium on Michael Clark's farm, in which, he said, there was not the space of a single foot neglected ; and also noticed Ruth M'Connell, who, by her own exertions, had made a small piece of ground (which had merely fed a goat before, and never yielded more potatoes than lasted until Christmas) now to keep a cow right well, and supply potatoes for the year.

The Chairman here adverted to the advantage of turnip feeding, and expressed his surprise that so many people would be so blind to their own interests as not to see the advantage of it. He stated that a rood of well-cultivated turnips would yield from eight to ten tons, or even much more, supposing the crops to be part white, yellow, and Swedish. This, therefore, would give from eighty to one hundred pounds a-day for a cow for seven months, or two hundred and ten days. Now, even a springer will give two quarts of milk more upon turnips than on either hay or straw. A stripper might increase four, and a new calved cow would give seven or eight quarts more. But taking it at two quarts, which is the lowest, these two quarts are worth two pence per quart all winter and spring ; and four pence per day, for two hundred and ten days, is exactly seventy shillings gained in extra milk by one rood of turnips, which is fourteen pounds to the acre. Thus the extra quantity pays fourteen pounds per acre for the turnips, and you have all the cow would have given without them for nothing, or next to nothing, and the manure besides. This is as plain as that two and two make four, and yet it would appear that people could not see it.

Mr. PARKS here rose and said, he had bought a springer that did not give two pints, and upon giving her turnips she gave four quarts.

The Chairman, in giving the health of Mr. Bruce, requested him to say how it happened that his field of turnips was quite green, without a single yellow leaf, and Mr. Singleton's, at the opposite side of the road, was quite yellow with the number of leaves that were decayed.



Mr. BRUCE—Gentlemen, this is very easily accounted for. Mr. Singleton, and almost all others, think when the leaves begin to cover the ground, that the horse-hoe or pony-plough is no longer necessary, and that the horses travelling through will injure the crop. Now, I think the reverse; and I ran the pony-plough three times through *mine* after they had attained the same growth that Mr. Singleton and others stop at. The consequence is, that mine are still in the height of their growth, and will grow on until Christmas, whilst theirs are stunted, and will not yield within one-third of the weight they would otherwise have done.

ROBERT MITCHELL, being next called, said his farm formerly produced him no more than about £8. 16s. which was the rent he then paid; he now had to pay more, but, by the new system, he had last year made £44. 5s. 4d. out of it, leaving plenty of food for himself and nine of a family. He had also increased his stock from one cow, to three cows and a horse; and he saw clearly that by going on as he was doing, he could have three times as much potatoes, oats, and flax, as ever he had formerly.

The premium list for rape was then read over, by which it appeared—

Mr. Anderson, of Drummard, got the 1st premium.

Edward Coyne, of Drumgaw, the 2d ditto.

Thomas Scott, of Dirlet, the 3d ditto.

Mr. ANDERSON bore testimony to the advantages he had derived in the increase of stock and crops. He stated he had sowed his rape in August, after flax; and that he had saved this year twenty-five bushels of winter vetches seed from less than an acre of land.

The Chairman here pointed out the necessity of early sowing both rape and winter vetches, and that not a moment should be lost in putting them in, even ridge by ridge, as fast as the ground could be cleared of the crop preceding—observing that a week in August was worth the whole month of October. He also noticed that Mr. Anderson had made near £12. an acre by his vetches, and recommended the more general sowing of that crop for seed.



*Letter from G. Meara, Esq., as to the Making-up of Butter  
in the County of Waterford.*

“ May Park, Waterford, Nov. 10, 1836.

“ MY DEAR MR. BLACKER—I have made the inquiry you wish for in your letter, which I received yesterday. There is a pretty good supply of fine butter at the Waterford market, which brings within a few shillings per cwt. of the Dutch in England; but the quantity made up as Dutch, packed in similar casks to Dutch, is very trifling, those casks being large, about one cwt., whilst the usual Irish package is a firkin, about three quarters gross, or sixty-five to seventy pounds. In the make of butter the milk or cream should *not* be suffered to sour, but churned sweet, and the milk well washed out, with as little handling as possible; the quantity of salt to each firkin not to exceed four pints; and if the butter be intended for early consumption, but three pints of salt will be sufficient. The salt should be made as fine as possible, and when the finest salt cannot be had, it should be pulverised with a rolling pin: about a tea-spoonful of saltpetre to each firkin, is considered by some an improvement. The Dutch casks are made of seasoned ash, with oisier hoops, twelve in number, and peeled, which gives the cask a white, neat appearance; each cask contains from one hundred to one hundred and twelve pounds of butter. This package is nearly given up here, and almost all the butter goes in firkins, full-bound. Most particular attention should be given to have the butter well packed, and that the timber be well-seasoned, of which the package is made.

“ I believe I have answered all the butter queries, and shall be happy, at all times, to hear from you on any subject.

“ Believe me yours, very truly,

“ GEORGE MEARA.”

*Letter from S. Corry, Esq., Newry, on same subject.*

“ Newry, 15th November, 1836.

“ DEAR SIR—From the best information I can collect, on the subject of making up butter in this country, too much salt is used. One ounce of good *Irish* salt to the pound of butter is sufficient, and butter so made up would command a better price.

“ S. CORRY.”



*George Scott's Account of his Experiment in Feeding Milch Cattle upon boiled Turnips and steamed cut Hay.*

“TO WILLIAM BLACKER, ESQ.

“SIR—By giving the following statement publicity, with the proceedings of the farmers' dinner, it may be of use to some of its readers. I tried the experiment, as directed by you, of feeding with boiled turnips and steamed hay, cut, and I find a great deal more benefit by it in the increase of milk than feeding with the raw turnip. I began to feed one springing cow in the month of February; at that time she was 'giving about four quarts per day with the above feeding, together with a little bran. The increase of milk in one week was two quarts per day. I would recommend this feeding of milch cattle to persons that have plenty of firing. A springer fed in this way in winter will give a great deal more milk when calved in summer.

“I remain, your obedient servant,

“GEORGE SCOTT,

“Lurgaboy, November 18th, 1836.”

*Statement of the quick growth of Italian Rye Grass, by Mr. O'Neil.*

Italian Rye Grass, sown June 23d, 1836, measured eighteen inches, August 8th; twenty-four and a half inches, August 12th; thirty-one and a half inches, August 15th; thirty-three inches, August 21st;

No. VI.

*Quality of Milk during the Process of Milking.*

Several large coffee-cups having been successively filled from one cow, till she was quite dry, the following results appeared, great care having been taken to weigh the cups to ascertain that they held exactly the same quantity. In every case the quantity of cream was found to increase in proportion as the process of milking advanced. In different cows the proportion varied, but in the greater number the excess



of cream in the last cup, as compared with the first, was as sixteen to one ; in some it was not so considerable ; therefore, as an average, it may be called as ten or twelve to one. The difference in the quality of the two sorts of cream was no less striking ; the cream given by the first-drawn milk was thin, white, and without consistence ; while that furnished by the last was thick, buttery, and of a rich colour. The milk remaining in the different cups presented similar difference : that which was drawn first, was very poor, blue, and had the appearance of milk and water ; that in the last cup, was of a yellowish hue, rich, and, to the eye and taste, resembled cream rather than milk. It appears, therefore, from these experiments, that if, after drawing seven or eight pints from a cow, half a pint remains in the teats, not only almost as much cream will be lost as the seven or eight pints will furnish, but that of the best quality, and which gives the richest taste and colour to butter. This fact has been corroborated by chemical experiments, and holds good with respect to goats and asses.

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## No. VII.

### *Mr. Anderson's Statement, as Agriculturist on Richhill Estate.*

In 1831, about twenty tenants sowed clover, and about the same number had turnips. The proprietors of the estate offered premiums for turnips, and there were only three competitors in that year.

In 1832, fifty-three persons sowed clover and fifty had turnips.

In 1836, premiums were offered for the best clover, and there were fifty-one competitors, holding under twelve acres each. Also one hundred persons had turnips.

In 1834, one hundred and fifty-six persons sowed clover, and two hundred and fifty-six had turnips ; and premiums having been offered for house-feeding, ninety-four persons house-fed their cattle.

In 1835, two hundred and eighty-seven persons sowed clover, and two hundred and sixty-seven have turnips, (not including small patches ; ) one hundred and sixteen persons had vetches ; and one hundred and nineteen are now house-feeding their cattle.



## No. VIII.

*Feeding Cattle on Flaxseed.—System of Mr. Wm. Taylor,  
Agriculturist to Lord Viscount Bangor.*

Bruise the seed at a mill, or make it into meal; then take as much cut hay, or straw, or chaff, as will make a sufficient feed for your cow or horse, &c. and put it into a pail or tub, and mix your linseed meal with it, and pour on boiling water sufficient to wet it well; cover it up closely, so as to prevent the steam escaping, and let it stand until cold, or nearly so (I have always found hot food injurious to cattle); two quarts of linseed meal, given daily to cow or horse, will add very much indeed to their fattening, and, of course, both to the quantity and quality of the cow's milk, but particularly to the quality. I have fed and fattened cattle both on linseed meal and linseed cake, mixed with cut hay, &c. and a little cold water sprinkled over it so as to make the meal stick to the hay, &c. and always found the cattle thrive, and fatten uncommonly well on it. Linseed gruel is an excellent food for calves; and I have always found them thrive better with a little of it in their milk, than when fed solely on milk: and I seldom or never found a diseased calf that was partly fed on linseed gruel. I generally allowed one quart to each calf, at each end of the day, in lieu of as much milk, until they were six weeks old, after which I gave them, by degrees, four quarts daily, deducting the milk as I added the gruel. One quarter linseed meal, when boiled about an hour, will make three quarts of excellent gruel. The calves got so fond of it, after getting it for some time, that they wont take their milk without it, except when very hungry indeed. Linseed should always be bruised, or made into meal, before it is given to any sort of cattle, otherwise they will void more or less of it whole, which is of little or no use to them.

## No. IX.

*Method of Curing Butter, strongly recommended in the Irish  
Agricultural Magazine, by which it may be preserved for  
years without any unpleasant taste.*

Take *two* parts of the best common salt, as fine as can be had, *one* part of sugar, and *one* part of saltpetre; beat them up together, and



blend the whole completely: take one ounce of this composition for every sixteen ounces of butter, work it well into the mass, and let it stand one month closed up before being opened for use. It requires this time to let the ingredients incorporate.

THE END.

















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## ADVERTISEMENT.

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### WORKS BY THE SAME AUTHOR

AN EDITION of the within Essay, with a Preface addressed to Landlords, giving full information to those who may be inclined to adopt the plan recommended, as the best mode of introducing it, and the results attending its introduction, together with the expenses likely to be incurred thereby.

THE CLAIMS of the LANDED INTERESTERS for LEGISLATIVE PROTECTION : which received the thanks of the great Agricultural Meeting held in London in 1835.

THE PRIZE ESSAY on the MANAGEMENT of the LANDED PROPERTY in IRELAND, in which are introduced some suggestions for the Employment of the Poor.

This Essay obtained the Gold Medal of the Royal Agricultural Society.

REVIEW of CHARLES SHAW LEFEVRE, Esq. on a LETTER, intended to prove the incorrectness and inutility of the conclusions and recommendations contained therein.

This work has received the thanks of the Committee of the Central Agricultural Society of Great Britain and Ireland at their Meeting on the 27th of June, 1837.